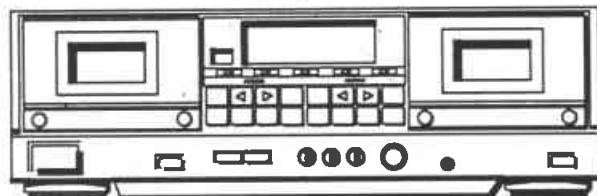


**AIWA®****AD-WX888****SERVICE  
MANUAL**

STEREO CASSETTE DECK

• BASIC TAPE MECHANISM :  $\alpha - 14$ 

• TYPE. H,U,C,E,K,Z

## SPECIFICATIONS

<b>Type</b>	Stereo cassette tape deck
<b>Track format</b>	4 tracks, 2 channels
<b>Power supply</b>	AD-WX888E, Z AC 220 V, 50/60 Hz AD-WX888K AC 240V, 50/60 Hz AD-WX888U, C AC 120 V, 60 Hz AD-WX888H AC 120 V/220 V/240 V switchable, 50/60 Hz
<b>Power consumption</b>	28 W
<b>Frequency response</b>	METAL tape: 20-18,000 Hz CrO <sub>2</sub> tape: 20-17,000 Hz NORMAL tape: 20-16,000 Hz
<b>Signal-to-noise ratio</b>	73 dB (METAL tape DOLBY C NR ON)
<b>Wow and flutter</b>	Deck 1 (PB.) 0.12% (according to DIN 45500) 0.065% (WRMS) Deck 2 0.18% (according to DIN 45500) 0.065% (WRMS)
<b>Tape speed</b>	4.8 cm/sec. (1 $\frac{7}{8}$ ips), 9.5 cm/sec (double speed)

<b>Recording system</b>	AC bias (frequency 105 kHz)
<b>Erase system</b>	AC erase
<b>Motor</b>	DC servomotor $\times$ 2
<b>Heads</b>	Record/playback head $\times$ 1 (PC-OCC coil pure amorphous head) Playback head $\times$ 1 (PC-OCC coil pure amorphous head) Erase head $\times$ 1 (Double-gap ferite head)
<b>Inputs</b>	LINE IN maximum input sensitivity: 50 mV (over 50 k $\Omega$ )
<b>Outputs</b>	LINE OUT standard output level: 400 mV (0 VU); suitable load impedance: over 50 k $\Omega$
<b>Dimensions</b>	430(W) $\times$ 140(H) $\times$ 313(D) mm
<b>Weight</b>	5.4 kg

- Design and specifications are subject to change without notice.
- Dolby noise reduction and HX Pro headroom extension manufactured under license from Dolby Laboratories Licensing Corporation. HX Pro originated by Bang & Olufsen.
- "Dolby", the double-D symbol, and "HX PRO" are trademarks of Dolby Laboratories Licensing Corporation.

AIWA Co., Ltd.

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Printed in Japan

## Cautions when servicing

The power circuit in this unit incorporates an overcurrent protector (shut-down circuit). When the overcurrent protector operates, voltages, VM, Vcc and Vref are not supplied. Once the overcurrent protector has operated, the power circuit will not be recovered automatically when is turned on, even after the cause of overcurrent is removed. Perform the following procedure to recover the power circuit.

1. Turn the power switch off.
2. Discharge C2 and C3 through a resistor of 100Ω or more. (It takes about 5 seconds to discharge C2 and C3 through a 100Ω resistor.)

Note : It takes about 90 seconds to discharge if step 2 is not performed.

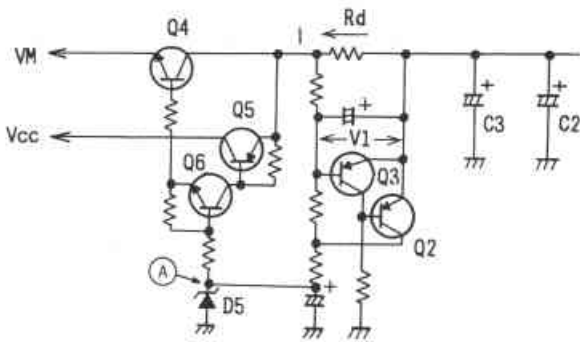
During normal operation (Q3: OFF, Q2: ON)

Since current I flowing to Rd is not large, V1 becomes lower than 0.6V and Q3 turns off. This causes Q2 to turn on, and the voltage at point ① becomes about 12V, so VM and Vcc are output.

When overcurrent occurs (Q3: ON, Q2: OFF)

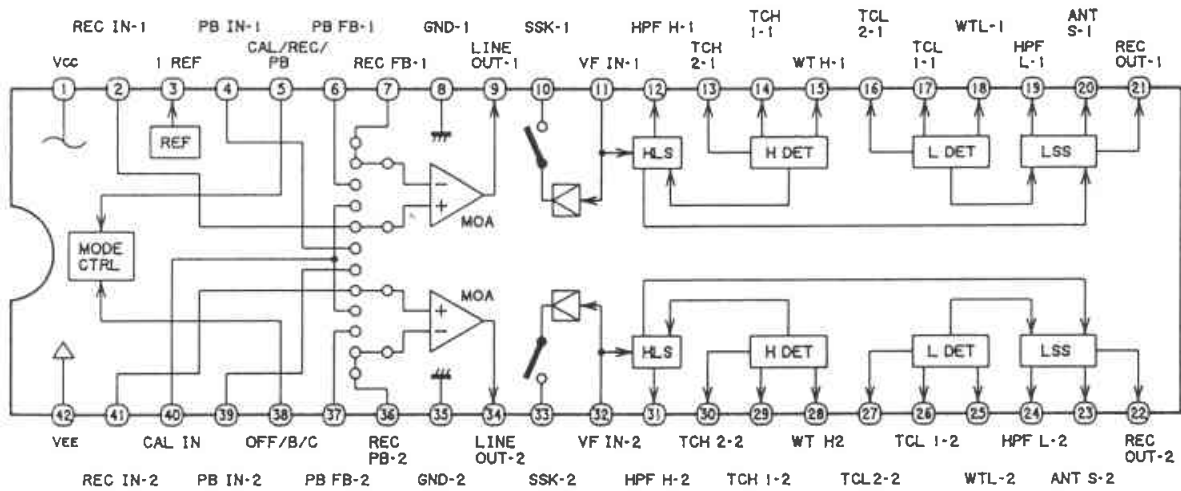
When current I rises due to trouble on the VM and Vcc lines, V1 becomes higher than 0.6V and Q3 turns on. This causes Q2 to turn off, and the voltage at point ① drops abnormally, so VM or Vcc is not output.

## Operation of Overcurrent Protector



## IC BLOCK DIAGRAM

IC, CX20187



# ELECTRICAL MAIN PARTS LIST

REF.NO.	PART NO.	DESCRIPTION	REF.NO.	PART NO.	DESCRIPTION
=== IC ===			C201	*87-018-121-019	CAP,CERA SS 150P
	87-001-441-019	IC,BA10358N	C202	*87-018-121-019	CAP,CERA SS 150P
	87-001-440-019	IC,BA15218N	C203	*87-018-120-019	CAP,CERA SS 120P
	87-001-143-019	IC,CX20187	C204	*87-018-120-019	CAP,CERA SS 120P
	87-001-334-010	IC,LB9051A	C209	*87-018-126-019	CAP,CERA SS 390P
	84-790-619-010	IC,LC6538D-4098	C210	*87-018-126-019	CAP,CERA SS 390P
	87-020-533-019	IC,M4069UBP	C211	*87-010-679-019	CAP,ELECT 10-16V KS
	87-020-680-019	IC,NJM2068S	C212	*87-010-679-019	CAP,ELECT 10-16V KS
	87-020-758-019	IC,NJM2068SD	C213	*87-010-679-019	CAP,ELECT 10-16V KS
	87-020-908-019	IC,NJM40668D	C214	*87-010-679-019	CAP,ELECT 10-16V KS
=== TRANSISTOR ===			C217	*87-018-134-019	CAP,CERA SS 0.01
	89-503-735-019	FET,2SK373GR	C405	*87-018-199-019	CAP,CERA SS 3300P
	87-026-463-019	TRANSISTOR,2SA933SR	C406	*87-018-199-019	CAP,CERA SS 3300P
	89-109-521-019	TRANSISTOR,2SA952K	C413	*87-018-197-019	CAP,CERA SS 1800P
	89-110-155-019	TRANSISTOR,2SA1015GR	C414	*87-018-197-019	CAP,CERA SS 1800P
	89-112-965-019	TRANSISTOR,2SA1296GR	C421	*87-010-404-019	CAP,ELECT 4.7-50V SME
	89-210-154-019	TRANSISTOR,2SB1015Y	C422	*87-010-404-019	CAP,ELECT 4.7-50V SME
	87-026-462-019	TRANSISTOR,2SC1740S,SR	C423	*87-018-132-019	CAP,CERA SS 2200P
	89-318-155-019	TRANSISTOR,2SC1815GR	C424	*87-018-132-019	CAP,CERA SS 2200P
	89-318-156-019	TRANSISTOR,2SC1815BL	C425	*87-018-119-019	CAP,CERA SS 100P
	89-320-011-019	TRANSISTOR,2SC2001K	C426	*87-018-119-019	CAP,CERA SS 100P
	89-331-130-019	TRANSISTOR,2SC3113	C471	*87-010-408-019	CAP,ELECT 47-50VX
	89-413-023-019	TRANSISTOR,2SD1302S	C472	*87-010-401-019	CAP,ELECT 1-50V
	89-414-065-019	TRANSISTOR,2SD1406GR	C473	*87-010-381-019	CAP,ELECT 330-16V SME
	87-026-200-019	TRANSISTOR,DTC114ES	C475	*87-018-133-019	CAP,CERA SS 4700P
	87-026-379-010	TRANSISTOR,RN2206	C478	*87-014-077-010	CAP,PP 6800P
			C479	*87-018-131-019	CAP,CERA SS 1000P
=== DIODE ===			C601	*87-018-131-019	CAP,CERA SS 1000P
	87-001-783-019	DIODE,1N4002	C602	*87-018-131-019	CAP,CERA SS 1000P
	87-020-691-019	DIODE,1SS132	C607	*87-018-134-019	CAP,CERA SS 0.01
	87-020-123-019	DIODE,DS446	C608	*87-018-134-019	CAP,CERA SS 0.01
	87-001-820-010	DIODE,GP15B(F)	C611	*87-018-130-019	CAP,CERA 820P
	87-027-676-019	DIODE,ZENER HZ12B3L	C612	*87-018-130-019	CAP,CERA 820P
	87-027-391-019	DIODE,ZENER HZ36-2	C615	*87-018-121-019	CAP,CERA SS 150P
	87-027-301-019	DIODE,ZENER HZ3A1	C616	*87-018-121-019	CAP,CERA SS 150P
	87-027-286-019	DIODE,ZENER HZ5C1	C617	*87-010-260-019	CAP,ELECT 47-25V
	87-027-649-019	DIODE,ZENER HZ7A2	C618	*87-010-263-019	CAP,ELECT 100-10V
	87-027-321-019	DIODE,ZENER HZ9B2	C701	*87-010-405-019	CAP,ELECT 10-50V SME
	87-027-584-019	DIODE,ZENER HZ9C1L	C702	*87-010-405-019	CAP,ELECT 10-50V SME
			C703	*87-018-133-019	CAP,CERA SS 4700P
=== MAIN CIRCUIT BOARD SECTION ===			C704	*87-018-133-019	CAP,CERA SS 4700P
C1	*87-010-400-019	CAP,ELECT 0.47-50V SME	C711	*87-010-400-019	CAP,ELECT 0.47-50V SME
C2	*87-010-390-019	CAP,ELECT 3300-25V SME	C712	*87-010-400-019	CAP,ELECT 0.47-50V SME
C3	*87-010-390-019	CAP,ELECT 3300-25V SME	C713	*87-010-677-019	CAP,ELECT 0.15-50V SRA
C4	*87-010-405-019	CAP,ELECT 10-50V SME	C714	*87-010-677-019	CAP,ELECT 0.15-50V SRA
C5	*87-010-384-019	CAP,ELECT 100-25V	C717	*87-010-545-019	CAP,ELECT 0.22-50V SME
C6	*87-010-644-019	CAP,ELECT 470-16V MUSE	C718	*87-010-545-019	CAP,ELECT 0.22-50V SME
C7	*87-010-263-019	CAP,ELECT 100-10V	C731	*87-010-404-019	CAP,ELECT 4.7-50V SME
C8	*87-010-644-019	CAP,ELECT 470-16V MUSE	C732	*87-010-404-019	CAP,ELECT 4.7-50V SME
C9	*87-010-237-019	CAP,ELECT 1000-16V SME	C751	*87-015-242-019	CAP,ELECT 2.2-50V LL
C11	*87-015-406-019	CAP,ELECT 100-100V	C752	*87-015-242-019	CAP,ELECT 2.2-50V LL
C13	*87-010-405-019	CAP,ELECT 10-50V SME	C761	*87-010-404-019	CAP,ELECT 4.7-50V SME
C14	*87-010-408-019	CAP,ELECT 47-50VX	C762	*87-010-404-019	CAP,ELECT 4.7-50V SME
C103	*87-018-120-019	CAP,CERA 120P	C763	*87-010-401-019	CAP,ELECT 1-50V
C104	*87-018-120-019	CAP,CERA 120P	C764	*87-010-401-019	CAP,ELECT 1-50V
C109	*87-018-126-019	CAP,CERA SS 390P	C765	*87-010-263-019	CAP,ELECT 100-10V
C110	*87-018-126-019	CAP,CERA SS 390P	C766	*87-010-263-019	CAP,ELECT 100-10V
C111	*87-010-679-019	CAP,ELECT 10-16V KS	C767	*87-018-209-019	CAP,CERA SS 0.1
C112	*87-010-679-019	CAP,ELECT 10-16V KS	C807	*87-010-252-019	CAP,ELECT 1000-6.3V
C113	*87-010-679-019	CAP,ELECT 10-16V KS	C808	*87-018-134-019	CAP,CERA SS 0.01
C114	*87-010-679-019	CAP,ELECT 10-16V KS	C809	*87-010-401-019	CAP,ELECT 1-50V
C117	*87-018-134-019	CAP,CERA SS 0.01	C812	*87-010-402-019	CAP,ELECT 2.2-50V SME
			C813	*87-010-382-019	CAP,ELECT 22-25V SME
			C814	*87-010-402-019	CAP,ELECT 2.2-50V SME

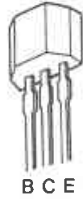
REF.NO.	PART NO.	DESCRIPTION	REF.NO.	PART NO.	DESCRIPTION
C815	*87-010-382-019	CAP,ELECT 22-25V SME	S915	87-031-863-019	TACT SW(REC/REC MUTE)(D2)
C816	*87-010-565-019	CAP,ELECT 470-12V SME	S916	87-036-170-019	TACT SW(SYNC.DUBB.HIGH)
C817	*87-010-565-019	CAP,ELECT 470-12V SME	S917	87-036-170-019	TACT SW(COUNTER RESET)(D1)
C818	*87-010-565-019	CAP,ELECT 470-12V SME	S918	87-036-170-019	TACT SW(COUNTER RESET)(D2)
C819	*87-010-565-019	CAP,ELECT 470-12V SME	S920	84-790-637-019	SLIDE SW(TIMER)
C821	*87-010-401-019	CAP,ELECT 1-50V	S921	84-790-637-019	SLIDE SW(STSD)
C822	*87-010-401-019	CAP,ELECT 1-50V	S922	84-790-637-019	SLIDE SW(DOLBY NR)
C823	*87-010-402-019	CAP,ELECT 2.2-50V SME			
C825	*87-010-260-019	CAP,ELECT 47-25V	=== PIN JACK CIRCUIT BOARD SECTION ===		
C826	*87-010-385-019	CAP,ELECT 220-25V	C753	*87-018-134-019	CAP,CERA SS 0.01
C902	*87-010-384-019	CAP,ELECT 100-25V	J751	87-009-023-019	JACK PIN(R/LINE IN,P/LINE OUT)
CF801	87-030-167-019	CERA LOCK CST4.0 MHZ			
△ FR1	87-029-017-010	RES,FUSE 1/4W 10 (EXCEPT U)	=== DECK-1 CIRCUIT BOARD SECTION ===		
J761	84-790-635-019	JACK,6.3(PHONES)	S1	87-036-109-010	PUSH SW SPPB61(CAST)
L401	*87-003-128-019	MICRO INDUCTOR 5.6 MMH	S2	87-036-110-010	PUSH SW SPPB62(CR02)
L402	*87-003-128-019	MICRO INDUCTOR 5.6 MMH	SFR1	*87-024-291-019	SFR,4.7K
L403	*87-003-131-019	MICRO INDUCTOR 10 MMH	SFR2	*87-024-291-010	SFR,4.7K
L404	*87-003-131-019	MICRO INDUCTOR 10 MMH	SOL1	*86-535-611-210	SOL,X-3 PL(PLAY)
L405	*82-231-622-010	COIL,22 MMH-J	SOL2	*86-535-612-210	SOL,X-3 FR(FRP)
L406	*82-231-622-010	COIL,22 MMH-J			
L471	*84-790-621-010	COIL,BIAS 105K AMO	=== DECK-2 CIRCUIT BOARD SECTION ===		
L601	*84-790-622-010	COIL,HX105K AMO	S1	87-036-109-010	PUSH SW SPPB61(CAST)
L602	*84-790-622-010	COIL,HX105K AMO	S2	87-036-110-010	PUSH SW SPPB62(CR02)
L701	*84-790-623-019	FILTER,DOLBY LPF 105K	S3	87-036-110-010	PUSH SW SPPB62(REA)
L702	*84-790-623-019	FILTER,DOLBY LPF 105K	S4	87-036-109-010	PUSH SW SPPB61(REB)
L703	*82-231-622-010	COIL,22 MMH-J	S5	87-036-109-010	PUSH SW SPPB61(METAL)
L704	*82-231-622-010	COIL,22 MMH-J	SFR1	*87-024-291-019	SFR,4.7K
△ R936	87-025-338-010	RES,MO 2.2-1W(U)	SFR2	*87-024-291-019	SFR,4.7K
SFR101	*87-024-168-019	SFR,1K	SOL1	*86-535-611-210	SOL,X-3 PL(PLAY)
SFR102	*87-024-168-019	SFR,1K	SOL2	*86-535-612-210	SOL,X-3 FR(FRP)
SFR201	*87-024-168-019	SFR,1K			
SFR202	*87-024-168-019	SFR,1K	=== SENSOR-1 CIRCUIT BOARD SECTION ===		
SFR401	*87-024-169-019	SFR,2.2K	CP1	87-001-367-019	PHOTO,SPI-315(O)CD
SFR402	*87-024-169-019	SFR,2.2K	=== SENSOR-2 CIRCUIT BOARD SECTION ===		
SFR601	*87-024-176-019	SFR,100K	CP1	87-001-367-019	PHOTO,SPI-315(O)CD
SFR602	*87-024-176-019	SFR,100K	=== RELAY-1 CIRCUIT BOARD SECTION ===		
SFR801	*87-024-177-019	SFR,220K	=== RELAY-2 CIRCUIT BOARD SECTION ===		
VR551	84-790-632-019	VR,250KB(BIAS FINE)(D1)	=== FRONT CIRCUIT BOARD SECTION ===		
VR651	84-790-632-019	VR,250KB(BIAS FINE)(D2)	=== POWER CIRCUIT BOARD SECTION ===		
VR751	84-790-631-019	VR,100KW(BALANCE)	△	87-033-147-019	FUSE CLAMP(EXCEPT U,C)
VR752	84-790-630-019	VR,50KA(REC LEVEL)	△ G15	*87-019-112-019	CAP,LINE 0.01E
			△ FU1	87-035-191-019	FUSE,3.15A 250V T E(H,E,K,Z)
			△ FU1	87-035-367-010	FUSE,3.15A 250V T E(H,E,K,Z)
			△ PT1	84-790-611-019	POWER TRANSFORMER H(H)
			△ PT1	84-790-612-019	POWER TRANSFORMER U,C(U,C)
			△ PT1	84-790-613-019	POWER TRANSFORMER E,Z(E,Z)
			△ PT1	84-790-614-019	POWER TRANSFORMER K,G(K)
			△ S1	87-036-015-019	PUSH SW(POWER)
			△ S2	87-036-136-019	ROTARY SW(VOLTAGE SELECTOR)(H)
			=== MISCELLANEOUS ===		
			△	*82-187-796-019	AC CORD (BS)(K)
			△	*82-187-797-019	AC CORD (E)(E,Z)
			△	*87-034-584-019	AC CORD (U)SPT-2(U,C)
			△	*87-034-749-019	AC CORD (H) W/PLUG(H)
			△	*87-085-184-010	AC CORD BUSHING D(H)
			△	*87-085-185-010	AC CORD BUSHING E(E,K,Z)
			△	*87-085-189-010	AC CORD BUSHING (SPT-2)(U,C)

REF. NO.	PART NO.	DESCRIPTION
M1	87-045-273-019	MOTOR,MMI6HLWC1(D1)
M2	87-045-235-010	MOTOR,MMA6B2LW(D2)
PH	87-046-326-010	HEAD,PH(D1)
RPEH	87-046-325-010	HEAD,RPEH(D2)



E C B

2SA933  
2SA952  
2SA1015  
2SA1296  
2SC1740  
2SC1815  
2SC2001  
2SD1302



B C E

2SC3113  
DTC114  
RN2206



S G D

2SK373



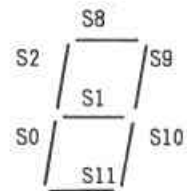
B C E

2SB1015  
2SD1406

MATRIX TABLE

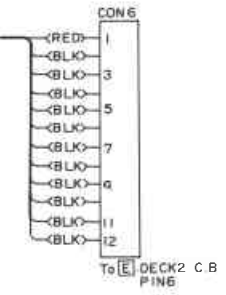
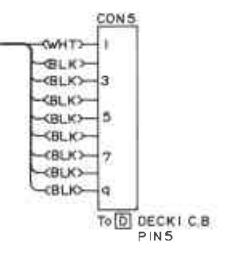
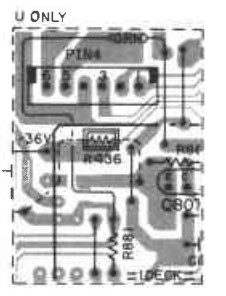
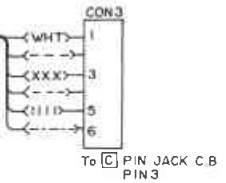
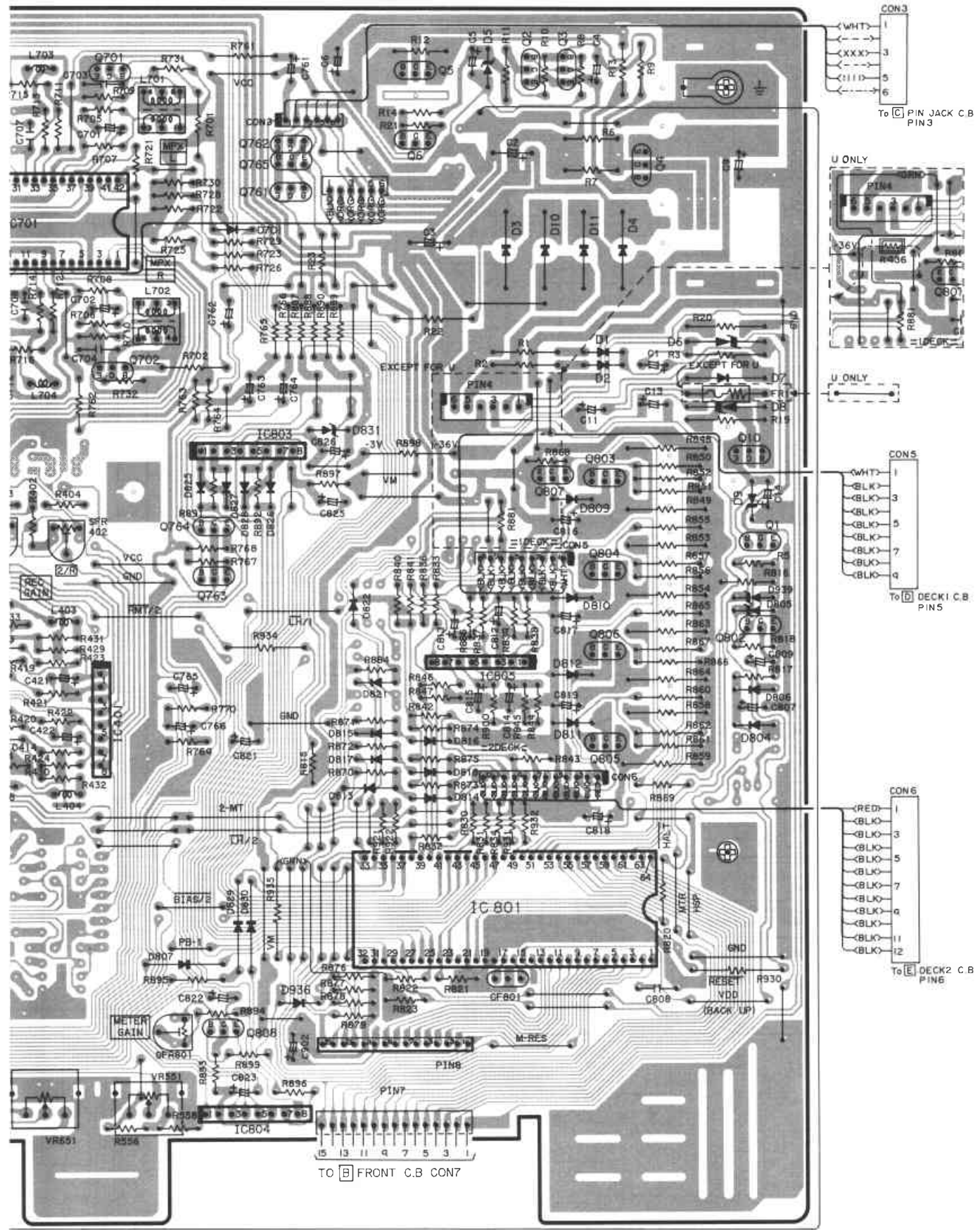
DISPLAY SECTION												
	S0	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11
T0	DECK1	10 <sup>3</sup>	7 SEG.	DECK1	DECK2		NOR DUB.		DECK1 10 <sup>3</sup> 7 SEG.			
T1	DECK1	10 <sup>2</sup>	7 SEG.	PLAY	REC RMT	---	LED	---	DECK1 10 <sup>2</sup> 7 SEG.			
T2	DECK1	10 <sup>1</sup>	7 SEG.	LED	LED				DECK1 10 <sup>1</sup> 7 SEG.			
T3	DECK1	10 <sup>0</sup>	7 SEG.	D1:<	D1:>	{B}	{C}	---	DECK1 10 <sup>0</sup> 7 SEG.			
T4	DECK2	10 <sup>3</sup>	7 SEG.	---	---	D2:<	D2:>	---	DECK2 10 <sup>3</sup> 7 SEG.			
T5	DECK2	10 <sup>2</sup>	7 SEG.	DECK2	DECK2		HI DUB		DECK2 10 <sup>2</sup> 7 SEG.			
T6	DECK2	10 <sup>1</sup>	7 SEG.	PLAY	PAUSE	---	LED	---	DECK2 10 <sup>1</sup> 7 SEG.			
T7	DECK2	10 <sup>0</sup>	7 SEG.	LED	LED				DECK2 10 <sup>0</sup> 7 SEG.			
T8	LOWER ----- 12 POINT PEAK HOLD METER / LEFT ----- HIGHER											
T9	LOWER ----- 12 POINT PEAK HOLD METER / RIGHT ----- HIGHER											

INPUT SECTION				
	DT0	DT1	DT2	DT3
T0	FWD PLAY/D1	REV PLAY/D1	>>/D1	<</D1
T1	STOP/D1	---	---	NOR DUB.
T2	FWD PLAY/D2	REV PLAY/D2	>>/D2	>>/D2
T3	STOP/D2	PAUSE/D2	REC/RMT/D2	HI DUB.
T4	RESET/D1	RESET/D2	---	---
T5	TIMER REC	TIMER PLAY	ONE WAY MODE	REVERSE MODE
T6	DOLBY C	DOLBY B	---	BLANK SKIP
T7	---	---	---	CST/D1
T8	RE-A/D2	RE-B/D2	---	CST/D2
T9	---	MODE:D2	---	---







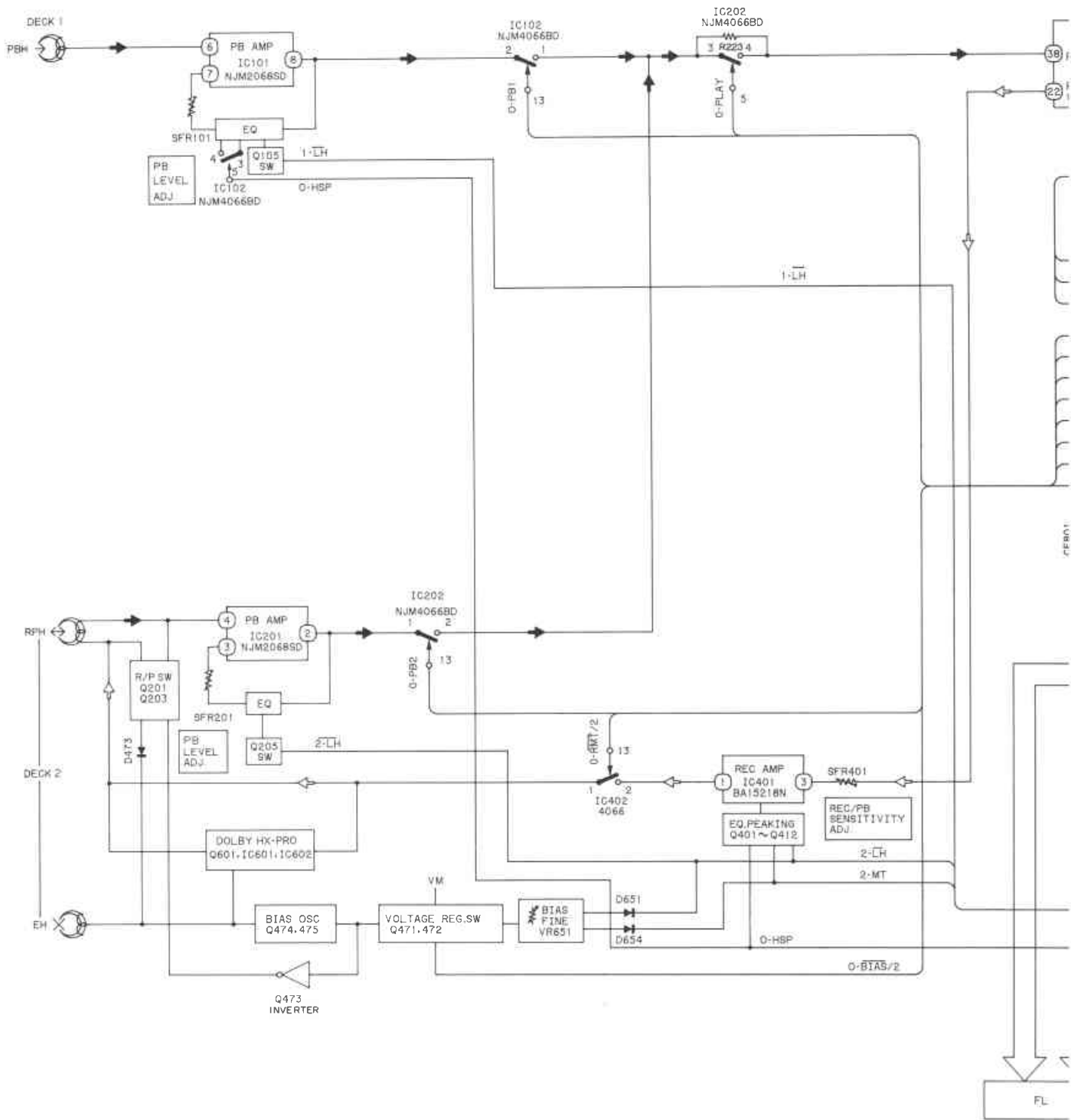


TO [B] FRONT C.B. CON7

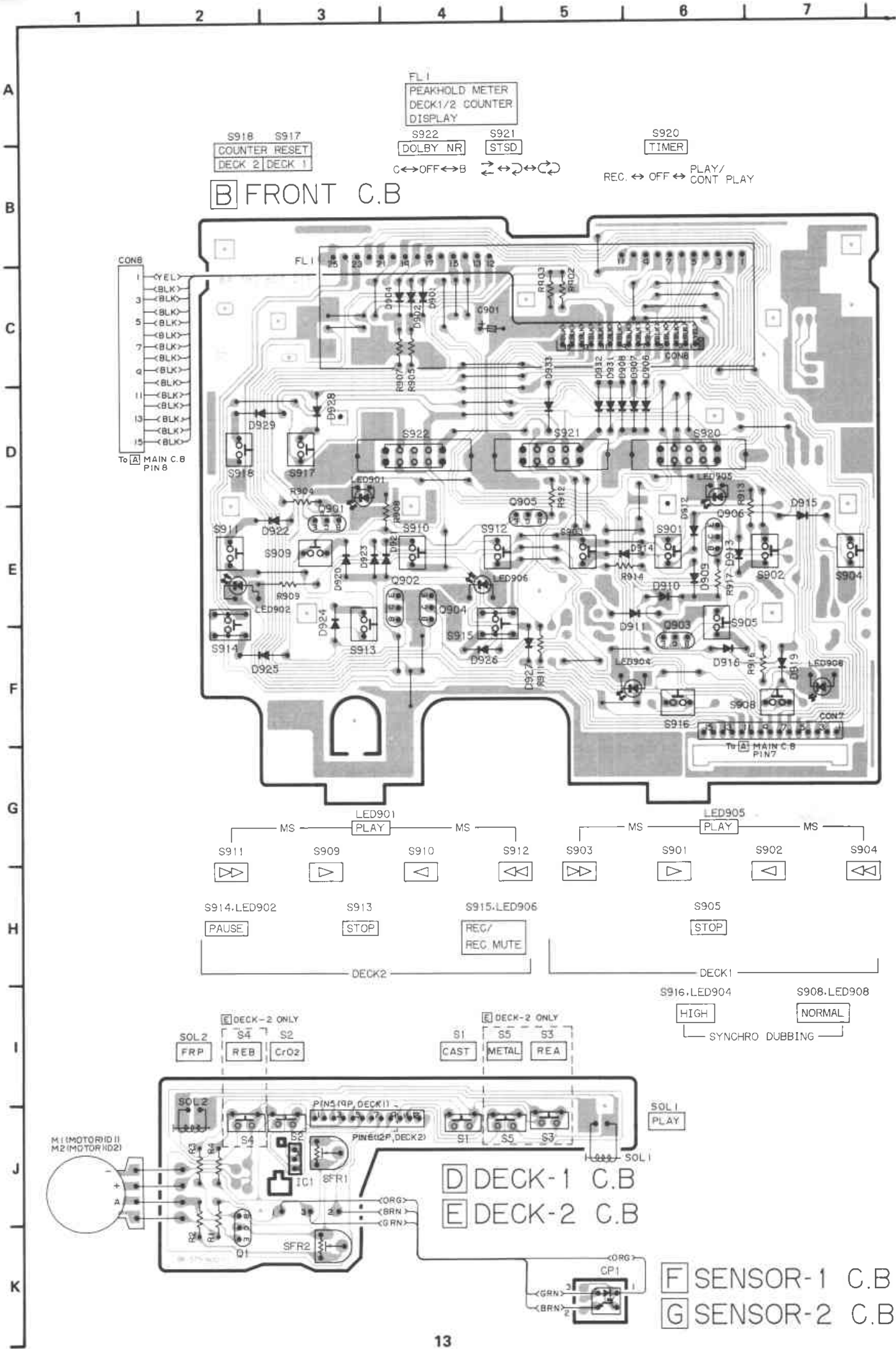
VR551 VR551  
BIAS FINE  
(NORMAL/Cr O2)  
DECK 2 DECK 1

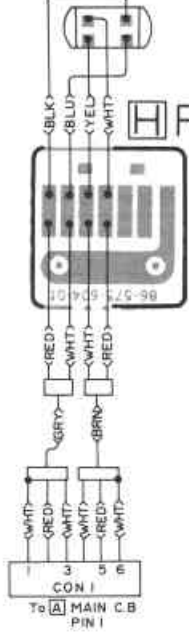
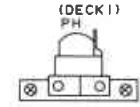
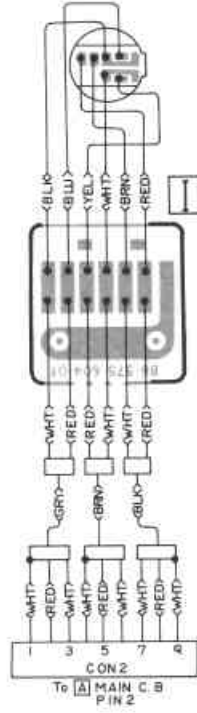
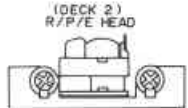
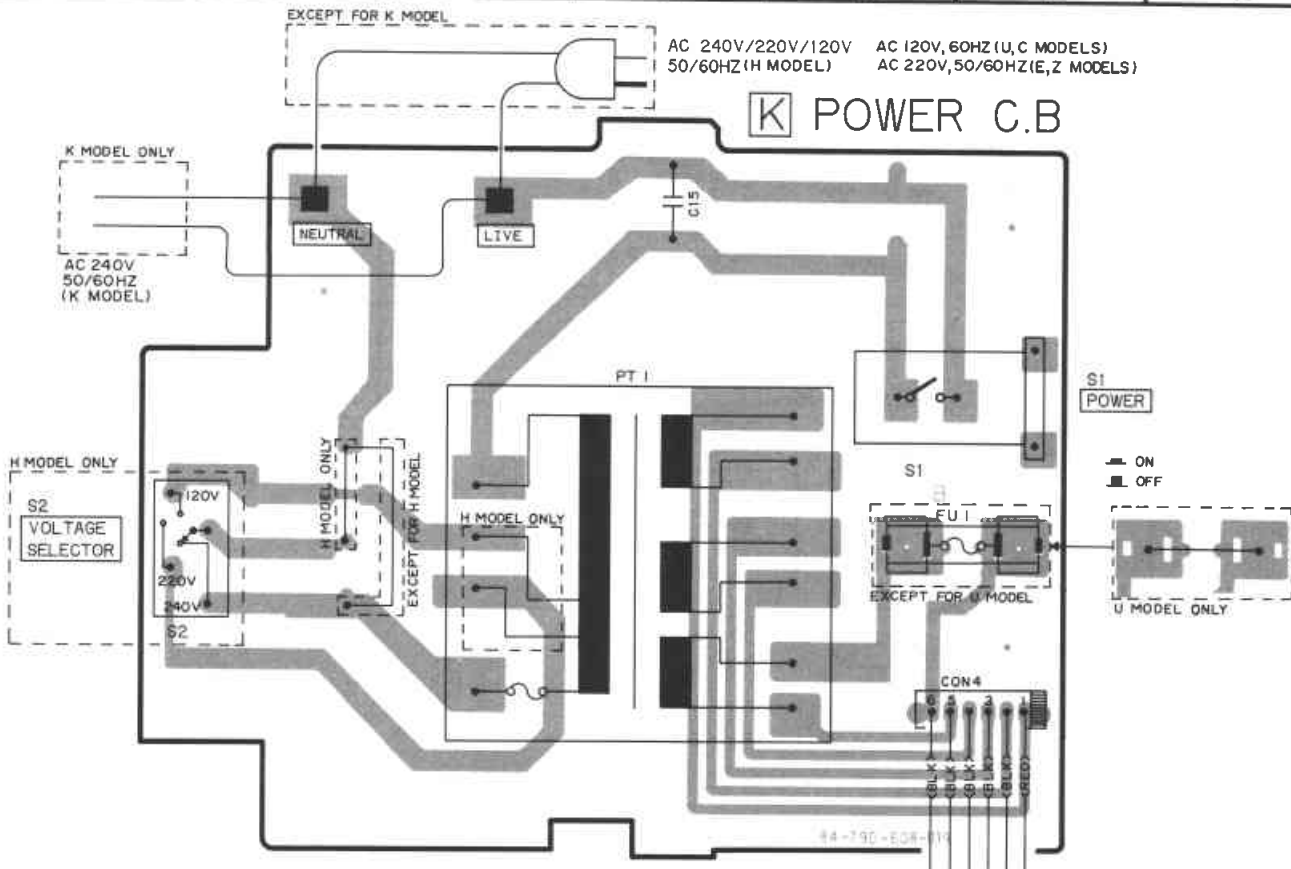


# BLOCK DIAGRAM

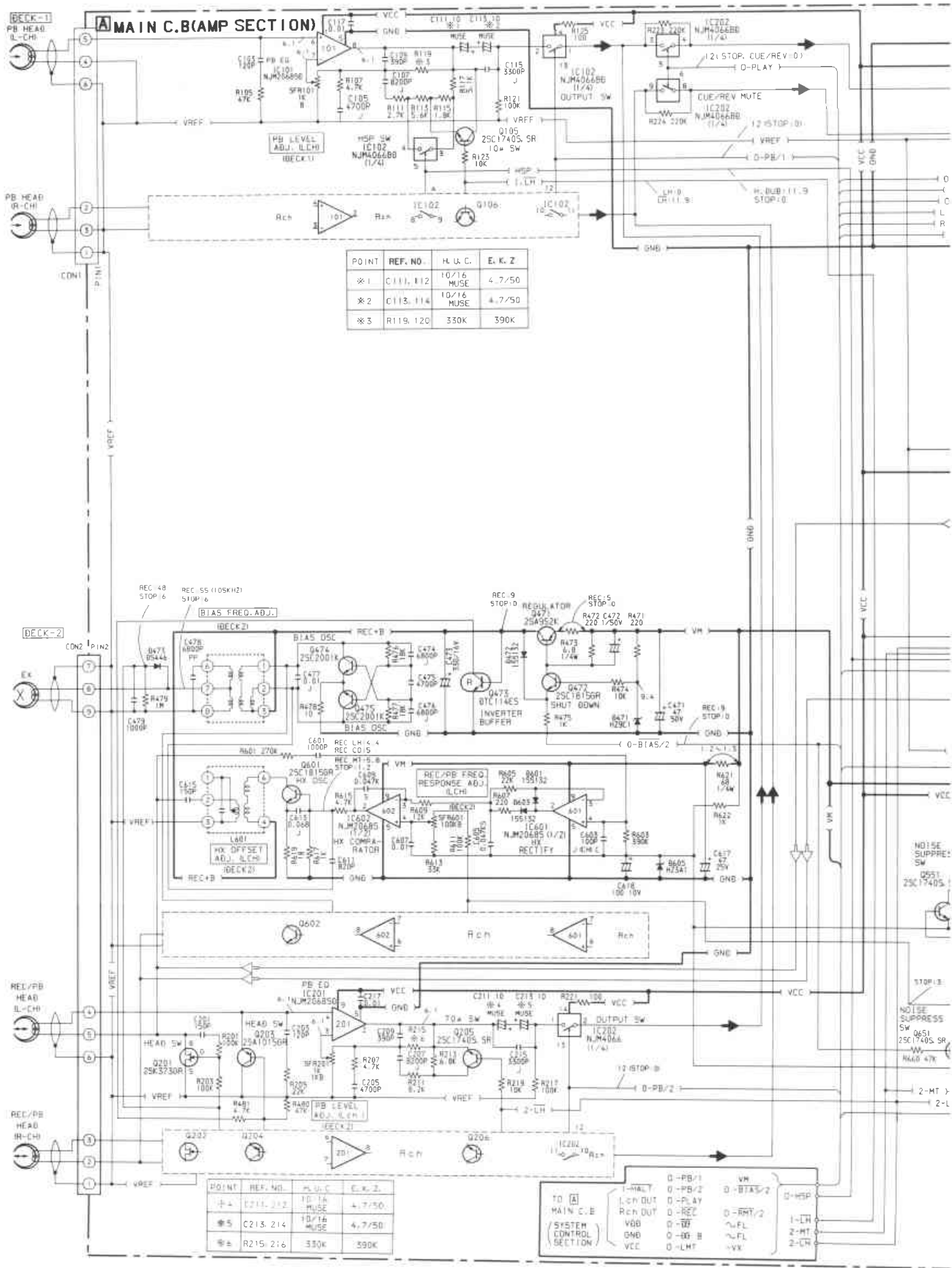


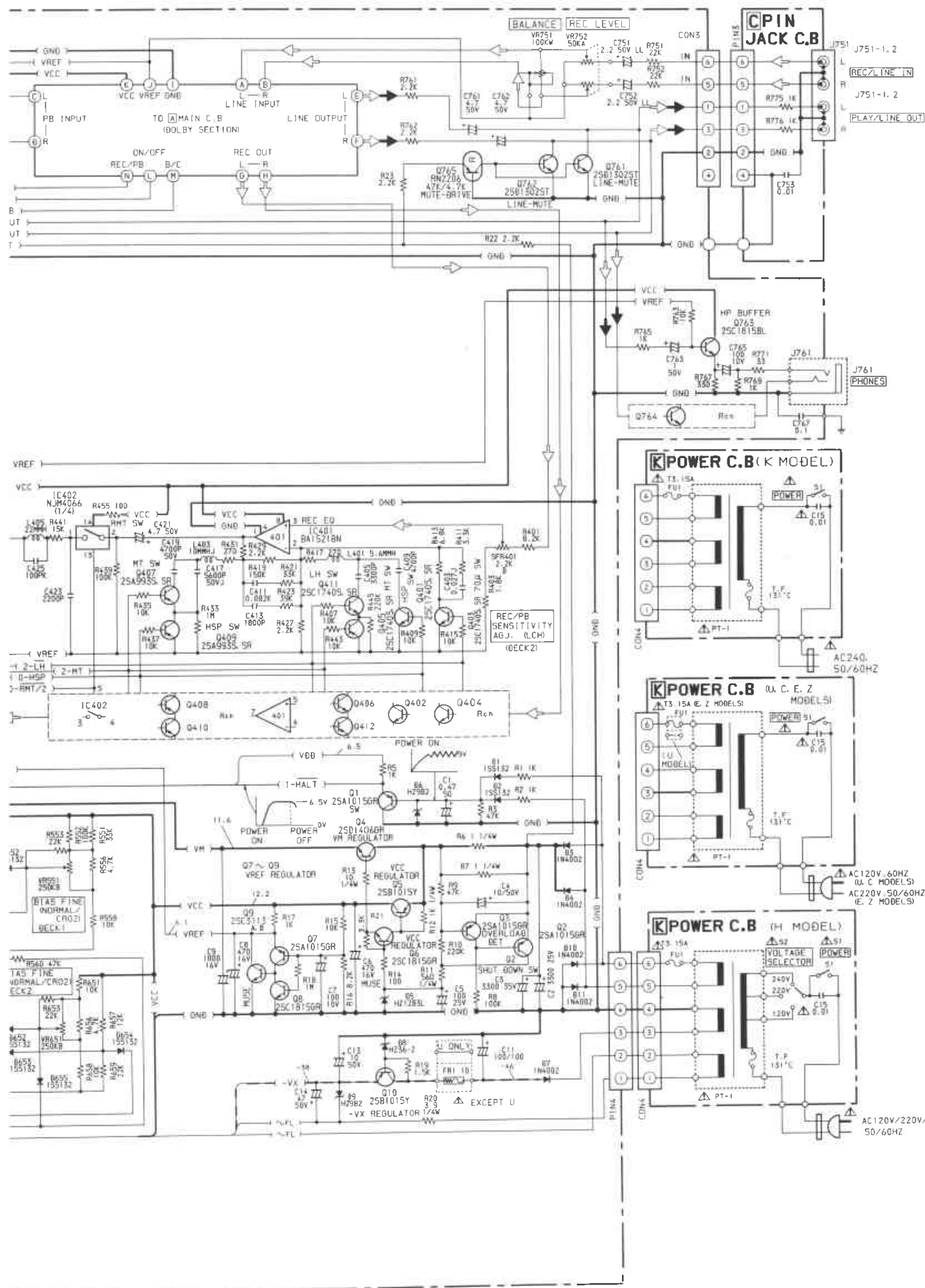






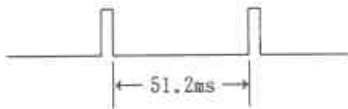
# SCHEMATIC DIAGRAM-1





# IC DESCRIPTION

IC, LC6538D-4098

Pin No.	Pin Name	I/O	Description	
1	S10	O	FL display segment outputs.	
2	S11	O		
3	—	—	Unused.	
4	O-MRES	O	Level meter T/V conversion reset pulse. 	
5 }	T9 }	O	FL display grid outputs and key scan outputs.	
14	T0			
15	VDD	—	Power supply pin (+6V).	
16	OSC1	—	A ceramic oscillator is connected (4MHz).	
17	OSC2			
18	VSS	—	Power supply remote control terminal (GND).	
19	TEST	I	Connected to ground.	
20	RES	I	Reset input. "L" input resets the IC.	
21	X1	—	Connected to ground.	
22	X2	—	Unused.	
23	I-HALT-REQ	I	Hold request input. When the power switch is turned off, this pin goes "L" and the IC enters the low current consumption mode and the direction of tape running is stored.	
24	I/O-SYNC	I/O	Unused.	
25	O-LMT	O	LINE MUTE output. "H" output mutes a signal.	
26	O-PLAY	O	CUE/REVIEW MUTE output and MS gain control terminal. Goes "H" during PLAY and "L" during CUE, REVIEW and MS.	
27	O-PB/1	O	DECK 1 playback sound control pin. Goes "H" when DECK 1 is playing.	When DECKs 1 and 2 are playing, only pin (28) goes "H".
28	O-PB/2	O	DECK 2 playback sound control pin. Goes "H" when DECK 2 is playing.	
29	O-MTR	O	Motor on/off control pin. "L" output turns the motor.	
30	O-HSP	O	Motor speed control pin. Outputs "H" during double speed.	
31 }	DT0 }	I	Key scan inputs.	
34	DT3			
35	I-LEVEL/L	I	Lch level meter signal input.	
36	I-LEVEL/R	I	Rch level meter signal input.	
37	I-MS	I	MS signal input.	
38	I-REMOTE	I	Remote control input.	
39	I-QUICK/1	I	DECK 1 quick reverse signal input.	"H" input reverse the tape.
40	I-QUICK/2	I	DECK 2 quick reverse signal input.	
41	O-REC	O	Dolby NR IC recording/playback mode switching pin. Goes "L" during recording and "L" during play and dubbing.	
42	O-RMT-2	O	DECK 2 REC MUTE control pin. "L" output turns REC MUTE on.	
43	O-RMT-1	O	DECK 1 REC MUTE control pin. "L" output turns REC MUTE on.	
44	O-BIAS-2	O	DECK 2 BIAS OSC control pin. "L" output causes oscillations.	
45	O-BIAS-1	O	DECK 1 BIAS OSC control pin. "L" output causes oscillations.	
46	O-DOLBY	O	Dolby NR on/off control pin. "L" output turns Dolby NR on.	
47	O-DOLBY-B	O	Dolby B/C NR control pin. "H" output activates Dolby B NR.	



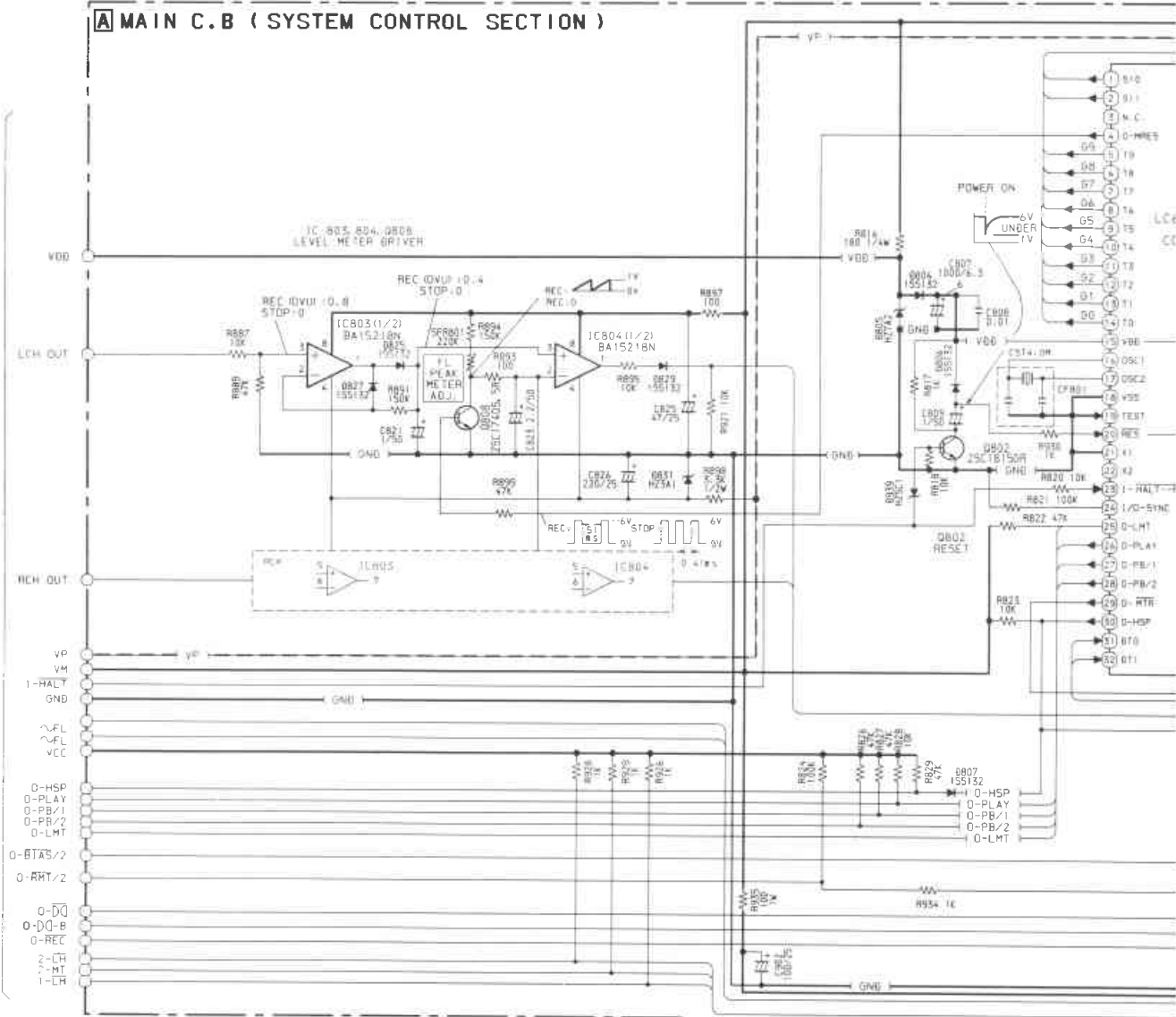
Pin No.	Pin Name	I/O	Description	
48	I-AUTO/2	I	DECK 2 tape end detection signal input.	When there is no change in the input for a predetermined time, the tape is reversed and then stops. (It is set to 4 sec during play and recording and 0.5 sec during fast forward and rewind.)
49	I-AUTO/1	I	DECK 1 tape end detection signal input.	
50	O-SOL-PB/1	O	DECK 1 play solenoid control pin.	
51	O-SOL-FRP/1	O	DECK 1 pause solenoid control pin.	
52	O-SOL-FRP/2	O	DECK 2 pause solenoid control pin.	
53	O-SOL-PB/2	O	DECK 2 play solenoid control pin.	
54	S0	O	FL display segment outputs.	
55	S1			
61	S7			
63	S8			
64	S9			
62	VP	-	Power supply pin to light the FL display (-38V).	

## PRACTICAL SERVICE FIGURE

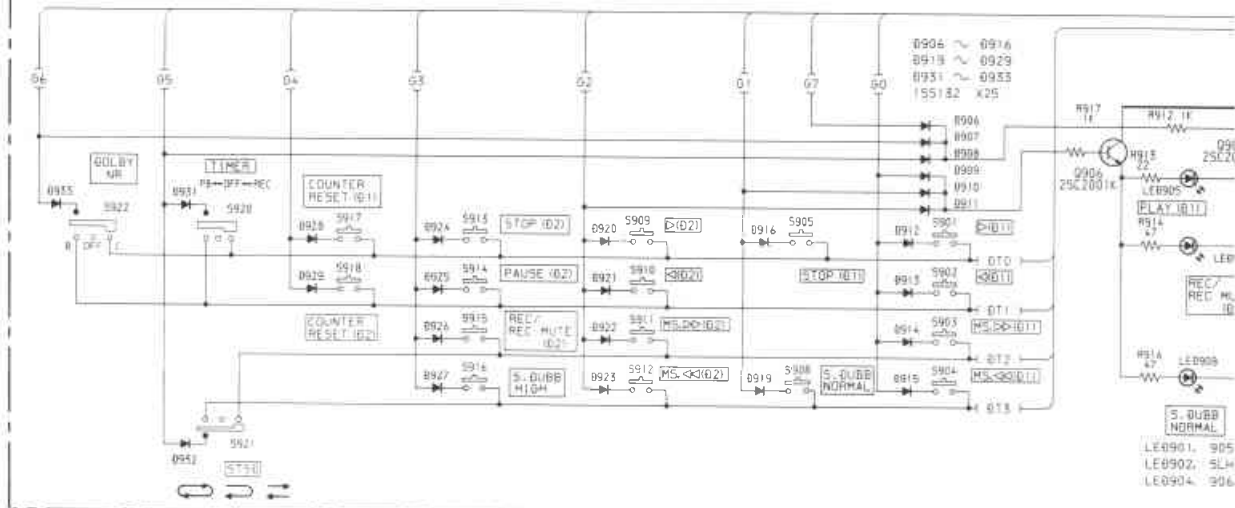
Playback output :	0.45V±1.5dB (LINE OUT)	TTA-100(TTA-111S)	
TTA-200(TTA-161,TCC-130)		Wow & flutter :	Less than 0.065% (D1,2)
PB/REC output :	0VU±1.5dB (LINE OUT)	(W.R.M.S)	
TTA-600(TTA-119K)	0VU±1.7dB	Take-up torque :	45±15 g-cm (D1,2) [0.44±0.15mN·m]
	(At Dubbing, Master tape TTA-200)	F.FWD torque :	120±40 g-cm (D1,2) [1.18±0.39mN·m]
PB/REC distortion :	Less than 2.5% (MT,CrO <sub>2</sub> ,NORM.)	Rewind torque :	120±40 g-cm (D1,2) [1.18±0.39mN·m]
Playback noise :	Less than 2.0/1.2mV	Back-tension :	3±2 g-cm (D1,2) [0.03±0.02mN·m]
(Unweighted)	(CrO <sub>2</sub> ,DOLBY NR C OFF/ON)	Test tapes :	METAL TTA-620 (TTA-119MP)
	Less than 2.5mV		CrO <sub>2</sub> TTA-610 (TTA-119H)
(DIN AUDIO)	(NORM.,DOLBY NR OFF)		NORMAL TTA-600 (TTA-119K)
	Less than 1.5/1.0mV		
	(CrO <sub>2</sub> ,DOLBY NR C OFF/ON)		
	Less than 1.8mV		
	(NORM.,DOLBY NR OFF)		
Erase ratio (125kHz) :	More than 60dB		
Cross talk (PB) :	More than 60dB		
Channel separation (PB):	More than 25dB		
Level drift :	Within 1dB		
PB/REC S/N ratio :	More than 43/48dB		
(Unweighted)	(MT,CrO <sub>2</sub> ,DOLBY NR C OFF/ON)		
	More than 41/46dB		
(Weighted-A)	(NORM.,DOLBY NR C OFF/ON)		
	More than 47/65dB		
	(MT,CrO <sub>2</sub> ,DOLBY NR C OFF/ON)		
	More than 45/65dB		
	(NORM.,DOLBY NR C OFF/ON)		
Dolby NR effect :	More than 8.5dB (B type)		
(TTA-610,CCIR Filter)	More than 17dB (C type)		
Recording bias frequency:	105kHz		
Tape speed :	3kHz±1.5% (D1,2)		

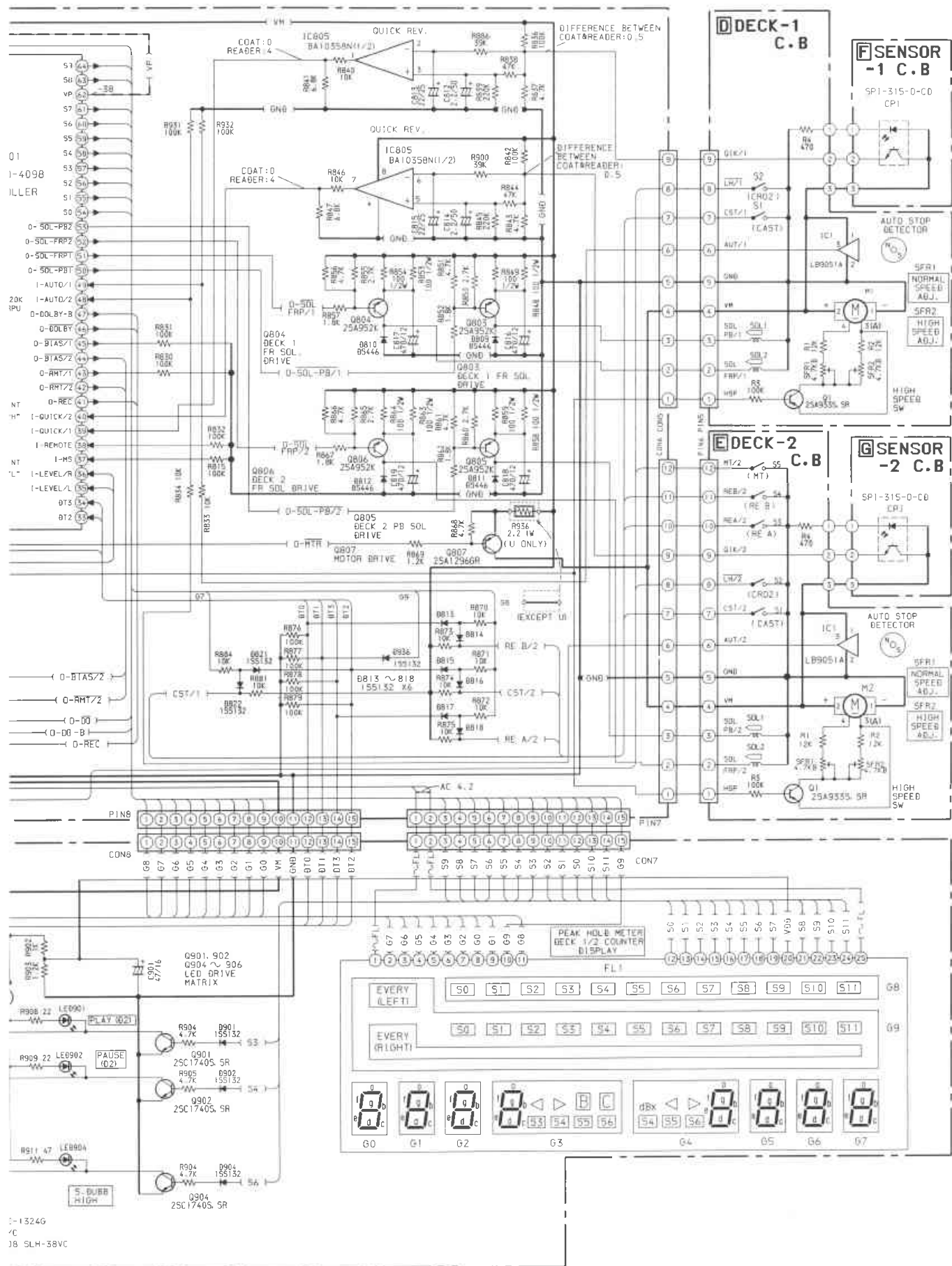
**A MAIN C.B ( SYSTEM CONTROL SECTION )**

TO **A**  
MAIN C.B  
( AMP  
SECTION )



**B FRONT C.B**





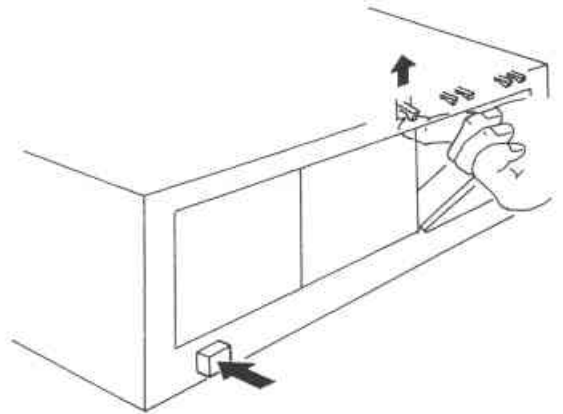
01  
 1-4098  
 MILLER  
 0-50L-PB2  
 0-50L-FRP2  
 0-50L-FRPT  
 0-50L-PBT  
 1-AUTO/1  
 1-AUTO/2  
 0-DOLBY-B  
 0-DOLBY-C  
 0-BIAS/1  
 0-BIAS/2  
 0-RMT/1  
 0-RMT/2  
 0-REC  
 1-QUICK/2  
 1-QUICK/1  
 1-RENOTE  
 1-MS  
 1-LEVEL/R  
 1-LEVEL/L  
 BT3  
 BT2  
 0-BIAS/2  
 0-RMT/2  
 0-DB  
 0-DB-B  
 0-REC

1-1324G  
 °C  
 18 5LM-38VC

# ADJUSTMENT

## Initial Settings

- TIMER : OFF
- STSD MODE : ↔
- DOLBY NR : OFF
- BIAS FINE (DECK 2) : Center
- BALANCE : Center
- REC LEVEL : Center
- OVU LEVEL : 1kHz, 320mV

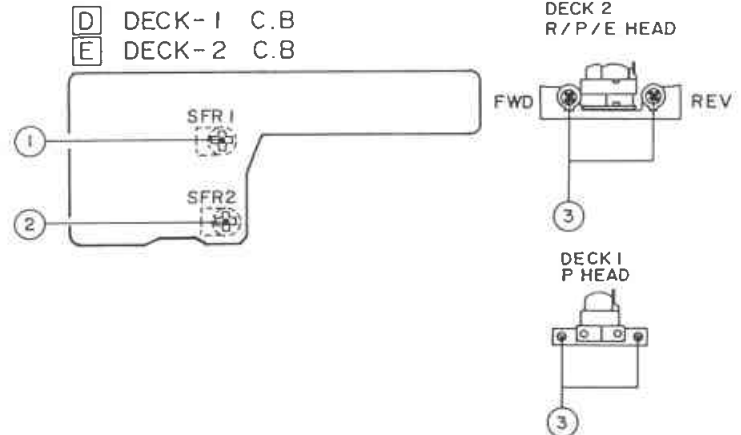


## Tape Speed Adjustment

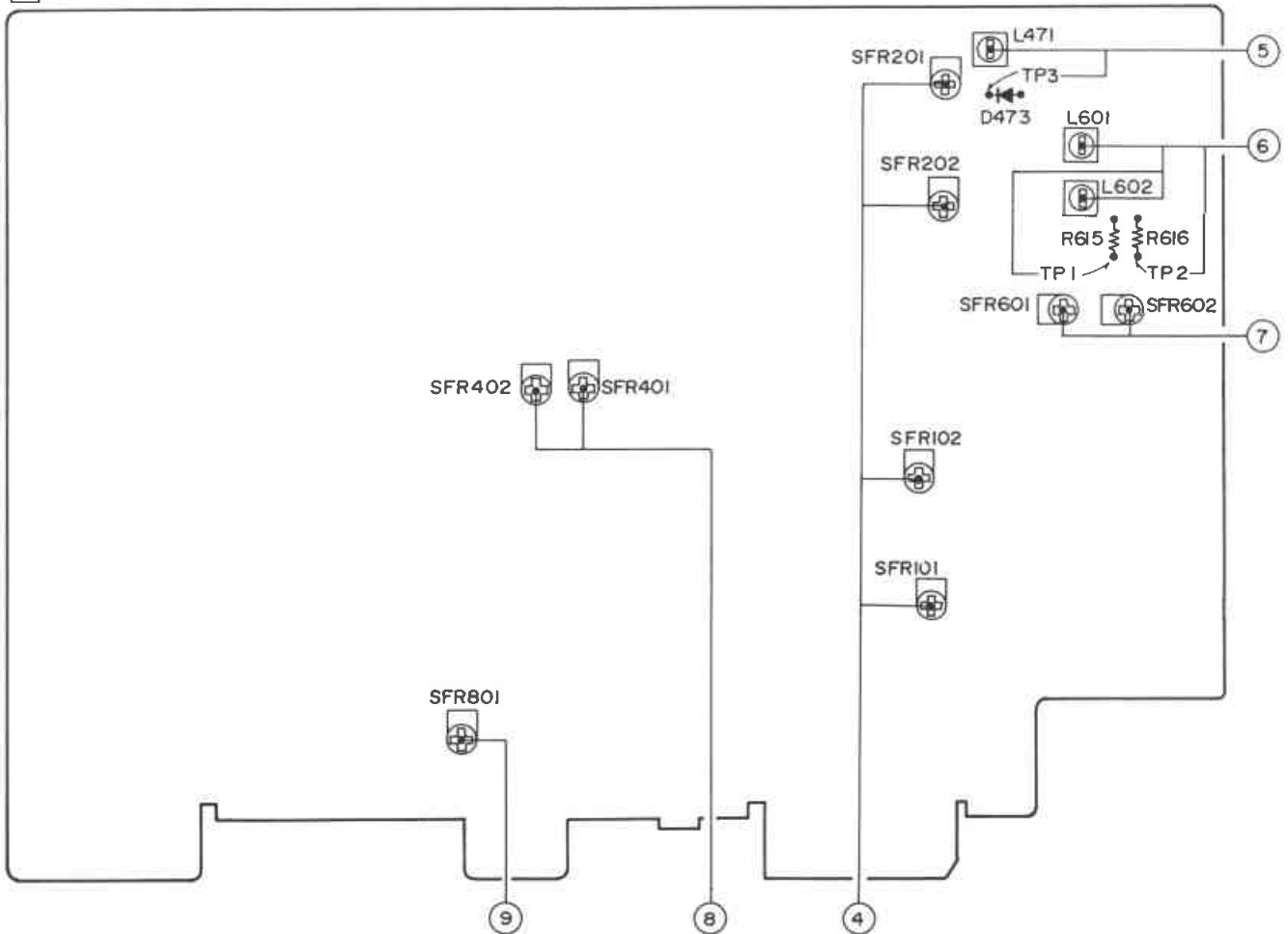
Set the unit to the test mode by the following procedure before performing speed adjustment. Be sure to perform normal speed adjustment first. If high speed adjustment is done first, adjustment will drift.

To set the test mode :

1. Turn the power switch off.
2. Open the cassette lid of DECK 2.
3. Turn the power switch on while pressing the miserasure prevention lever (FWD side) of DECK 2 as shown in the figure.
4. After several seconds, the FL display light showing that the unit has entered the test mode.



## A MAIN C.B



1. Normal Speed Adjustment (DECK 1, DECK 2)
 

Settings : • Test tape: TTA-100 (TTA-111S)

  - Test point: LINE OUT jack
  - Adjustment location: SFR1 on  DECK-1 C.B  
SFR1 on  DECK-2 C.B

Method : Play the test tape and adjust so that the frequency is 3000Hz.
  
2. High Speed Adjustment (DECK 1, DECK 2)
 

Settings : • Test tape: TTA-100 (TTA-111S)

  - Test point: LINE OUT jack
  - Adjustment location: SFR2 on  DECK-1 C.B  
SFR2 on  DECK-2 C.B

Method :

  1. Set the unit to the test mode.
  2. Load test tape TTA-100 (TTA-111S).
  3. Press the PLAY button and then the HIGH button to set the unit to the high speed mode.
  4. Adjust SFR2 so that the frequency is 6000Hz.
  5. After adjustment is completed, press the HIGH button to set the unit to the normal speed mode.
  6. Press the STOP button.
  7. Turn the power switch off to release the test mode.

Notes: (1) Keys other than the HIGH button will not operate in the high speed mode.  
(2) Do not turn the power switch off in the high speed mode.
  
3. Azimuth Adjustment (DECK 1, DECK 2)
 

Settings : • Test tape: TTS-310 (TTA-317E)

  - Test point: LINE OUT jack
  - Adjustment location: Azimuth adjustment screws (DECK-1, DECK-2, FWD, REV)

Method : Play the 10kHz signal of test tape and adjust so that the output is maximum and the waveforms in the Lissajours are in phase. Then tighten the screw slightly so that the output is within -0.5dB for the maximum value and the waveforms are within 90°.
  
4. Playback Level Adjustment (DECK 1, DECK 2)
 

Settings : • Test tape: TTA-200 (TTA-161, TCC-130)

  - Test point: LINE OUT jack
  - Adjustment location: SFR101 (DECK 1, Lch)  
SFR102 (DECK 1, Rch)  
SFR201 (DECK 2, Lch)  
SFR202 (DECK 2, Rch)

Method : Play the test tape and adjust so that the output level is 450mV±0.5dB.
  
5. Bias Frequency Adjustment (DECK 2)
 

Settings : • Test tape: TTA-620 (TTA-119MP)

  - Test point: TP3 (D473 cathode)
  - Adjustment location: L471

Method : Set to the record mode and adjust so that the frequency is 105kHz±0.3kHz.
  
6. HX Offset Adjustment (DECK 2)
 

Settings : • Test tape: TTA-620 (TTA-119MP)

  - Test point: TP1 (R615, Lch)  
TP2 (R616, Rch)
  - Adjustment location: L601 (Lch)  
L602 (Rch)

Method : Set to the record mode and adjust so that the bias voltage leaking to the test point is minimum.
  
7. REC/PB Frequency Response Adjustment (DECK 2)
 

Settings : • Test tape: TTA-600 (TTA-119K)

  - Input signal: 1kHz/10kHz (LINE IN jack)
  - Test point: LINE OUT jack
  - Adjustment location: SFR601 (Lch)  
SFR602 (Rch)

Method : Apply a 1kHz signal and adjust an attenuator so that the output level is 32mV at LINE OUT jack. Record and play back the 1kHz and 10kHz signals and adjust so that the output level of 10kHz signal is +0.5dB±0.5dB for 1kHz signal.
  
8. REC/PB Sensitivity Adjustment (DECK 2)
 

Settings : • Test tape: TTA-600 (TTA-119K)

  - Input signal: 1kHz (LINE IN jack)
  - Test point: LINE OUT jack
  - Adjustment location: SFR401 (DECK 2, Lch)  
SFR402 (DECK 2, Rch)

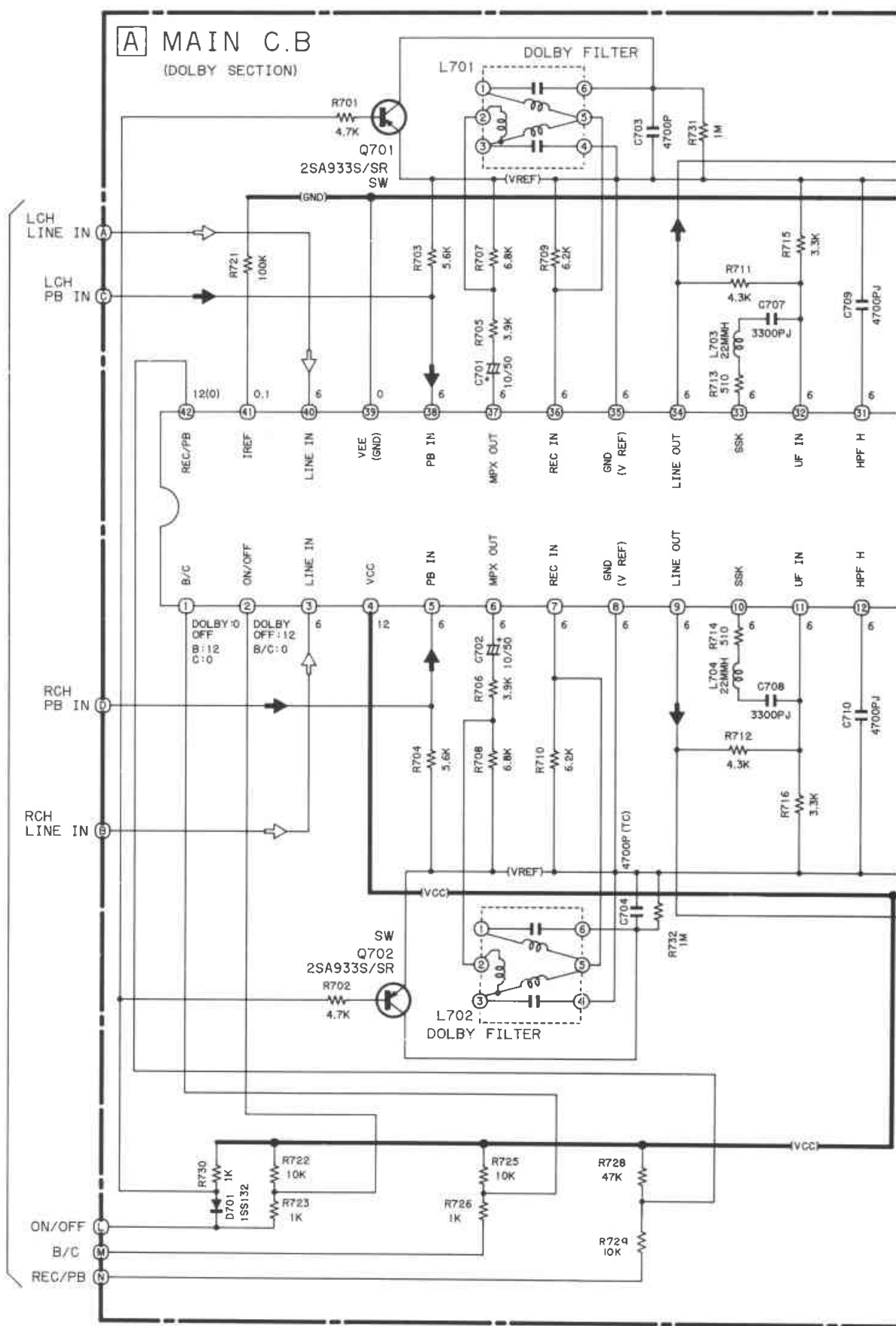
Method : Apply a 1kHz signal and adjust an attenuator so that the output level is 32mV at LINE OUT jack. Record and play back the 1kHz signal and adjust so that the output is 32mV±0.5dB.
  
9. FL Peak Meter Adjustment (DECK 1)
 

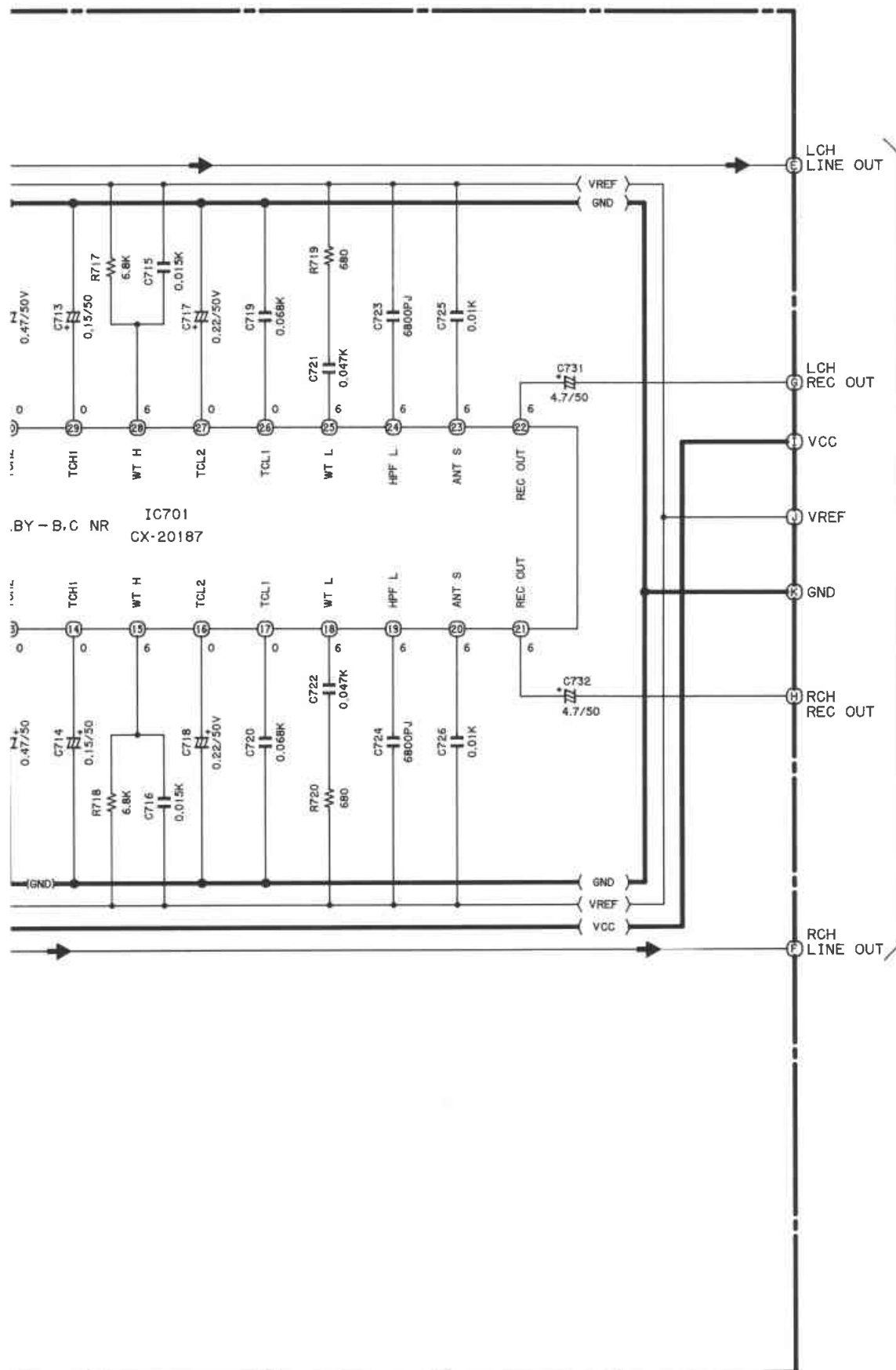
Settings : • Test tape: TTA-600 (TTA-119K)

  - Input signal: 1kHz (LINE IN jack)
  - Test point: LINE OUT jack
  - Adjustment location: SFR801

Method : Apply a 1kHz signal of 320mV and record it to a test tape and adjust SFR801 so that FL peak meter indicates 0VU. Play back the test tape and confirm that FL peak meter indicates +3dB (9 Blue LED light on).

TO [A] MAIN C.B  
(AMP SECTION)



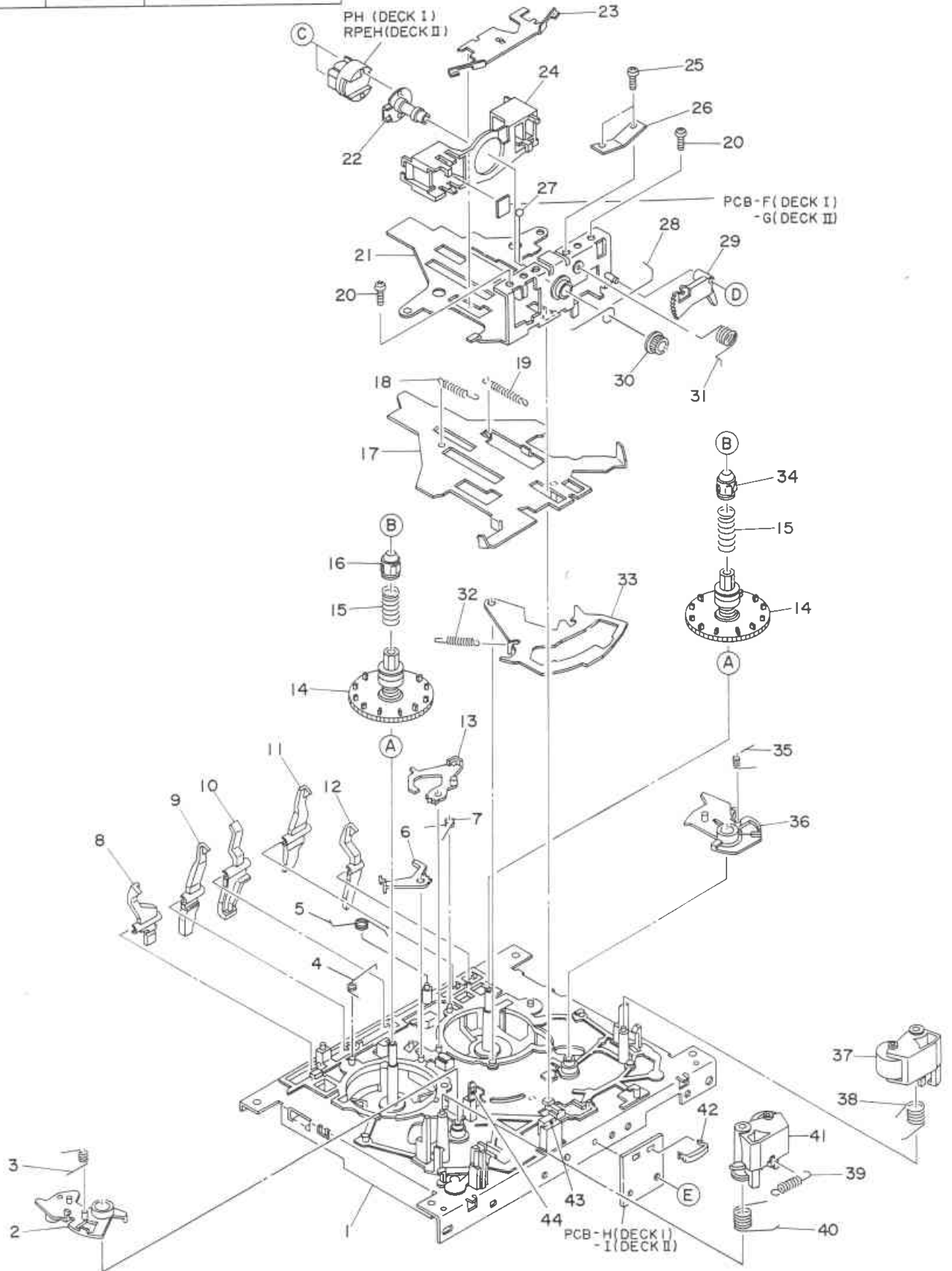


TO MAIN C.B  
(AMP SECTION)



EXPLODED VIEW-2

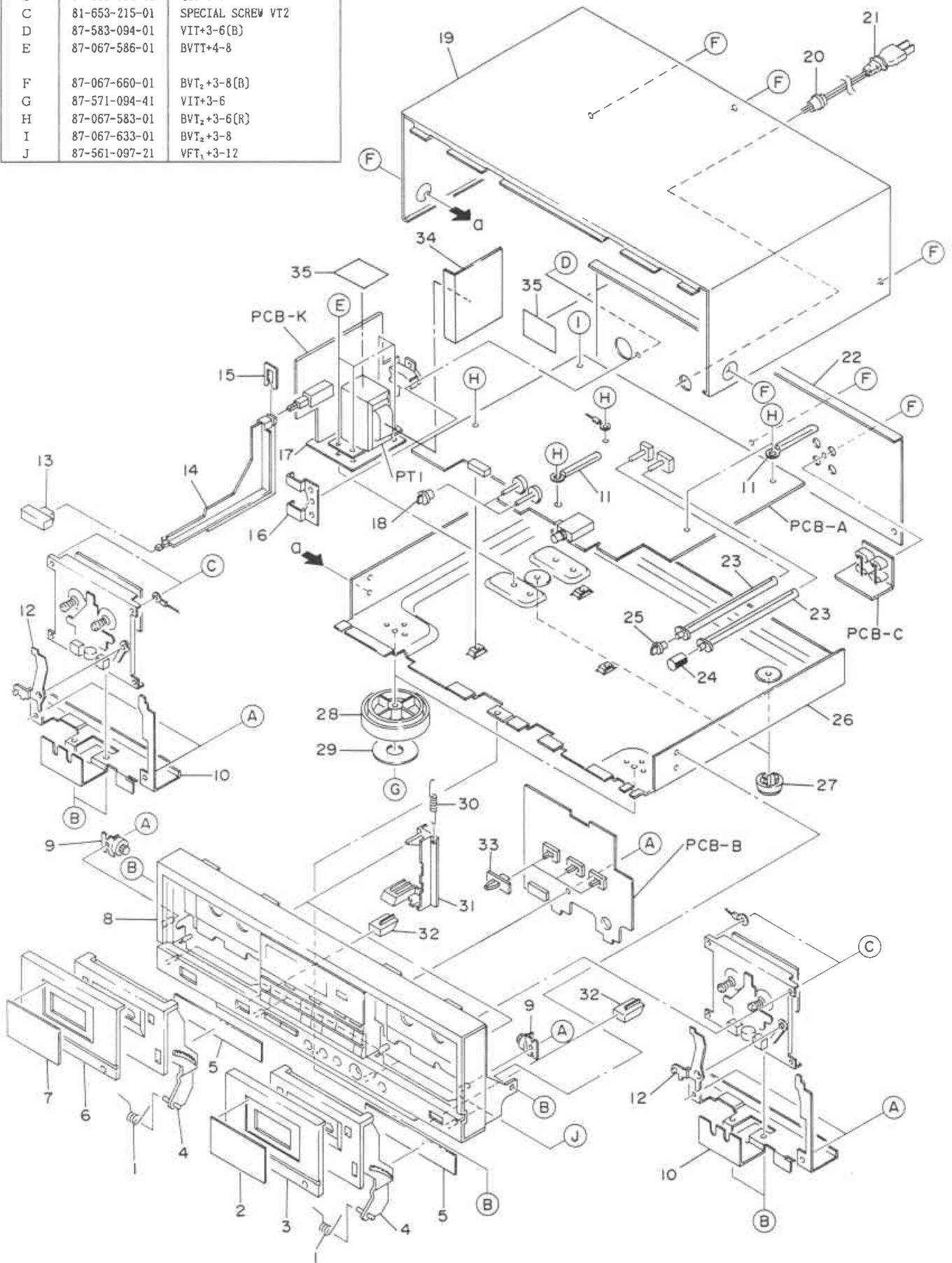
REF. NO.	PART NO.	DESCRIPTION
A	87-067-470-01	PW4. 1-6. 9-0. 13
B	86-524-418-01	V F T 2 +1. 4-5
C	87-067-177-01	V +1. 6-5. 5
D	87-081-489-01	PW1. 7-3. 5-0. 25
E	87-067-174-01	V T T + 2 - 4



PART NO. CHANGED TO	REF. NO.	PART NO.	DESCRIPTION	COMMON MODEL	Q' TY
	2-1	★86-575-217-110	MECHANIZUM CHASSIS ASSY		1
	2-2	★86-535-239-110	LEVER, PLAY R		1
	2-3	★86-535-283-019	T-SPRING, PLAY GEAR R		1
	2-4	★86-535-371-019	T-SPRING, BRAKE R		1
	2-5	★86-575-225-010	T-SPRING, CASSETTE		1
	2-6	★86-535-252-210	LEVER, BRAKE R		1
	2-7	★86-535-370-019	T-SPRING, BRAKE F		1
	2-8	★86-535-247-210	LEVER, REC GUARD A (DECK II)		1
	2-9	★86-535-250-010	LEVER, METAL (DECK II)		1
	2-10	★86-535-249-210	LEVER, CASSETTE SENSOR		1
	2-11	★86-535-254-110	LEVER, CR		1
	2-12	★86-535-248-310	LEVER, REC GUARD B (DECK II)		1
	2-13	★86-535-251-010	LEVER, BRAKE F		1
	2-14	★86-535-240-210	REEL TABLE R ASSY		2
	2-15	★86-535-293-019	C-SPRING, REEL TABLE		2
	2-16	★86-524-218-119	STOPPER, REEL TABLE S		1
	2-17	★86-535-215-310	SLIDE PLATE ASSY		1
	2-18	★86-575-227-010	E-SPRING, LEVER SLIDE		1
	2-19	★86-575-226-010	E-SPRING, CHASSIS HEAD		1
	2-20	★86-575-236-010	S-SCREW, TAPE ADJUSTMENT		2
	2-21	★86-575-209-010	HEAD CHASSIS ASSY		1
	2-22	★86-575-207-010	HEAD HOUSING ASSY		1
	2-23	★86-535-289-010	P-SPRING, HEAD CHASSIS		1
	2-24	★86-575-214-110	GUIDE, TAPE		1
	2-25	★86-575-235-010	S-SCREW, AZIMUTH		2
	2-26	★86-524-300-019	P-SPRING, AZIMUTH		1
	2-27	★87-073-018-019	STEEL BALL 1.588		1
	2-28	★86-575-240-010	T-SPRING, GUIDE		1
	2-29	★86-535-246-210	GEAR, SEGMENT		1
	2-30	★86-575-206-010	GEAR, HEAD FR		1
	2-31	★86-535-290-010	T-SPRING, GEAR SEGMENT		1
	2-32	★86-535-284-010	E-SPRING, LEVER DIRECTION		1
	2-33	★86-535-218-210	LEVER DIRECTION ASSY		1
	2-34	★86-524-233-119	STOPPER, REEL TABLE T		1
	2-35	★86-535-282-019	T-SPRING, PLAY GEAR F		1
	2-36	★86-535-238-210	LEVER, PLAY F		1
	2-37	★86-535-226-110	PINCH LEVER F ASSY		1
	2-38	★86-575-222-010	T-SPRING, PINCH F		1
	2-39	★86-535-287-110	E-SPRING, PINCH		1
	2-40	★86-575-223-010	T-SPRING, PINCH R		1
	2-41	86-535-228-110	PINCH LEVER R ASSY		1
	2-42	★86-575-234-010	HOLDER, WIRE		1
	2-43	★86-535-353-010	FELT SQ 5-4-2		1
	2-44	★86-517-353-019	SEET, QUICK		1

# EXPLODED VIEW-1

REF. NO.	PART NO.	DESCRIPTION
A	87-067-578-01	BVT <sub>2</sub> +3-8
B	87-591-094-41	QIT+3-6
C	81-653-215-01	SPECIAL SCREW VT2
D	87-583-094-01	VIT+3-6(B)
E	87-067-586-01	BVIT+4-8
F	87-067-660-01	BVT <sub>2</sub> +3-8(B)
G	87-571-094-41	VIT+3-6
H	87-067-583-01	BVT <sub>2</sub> +3-6(R)
I	87-067-633-01	BVT <sub>2</sub> +3-8
J	87-561-097-21	VFT <sub>1</sub> +3-12

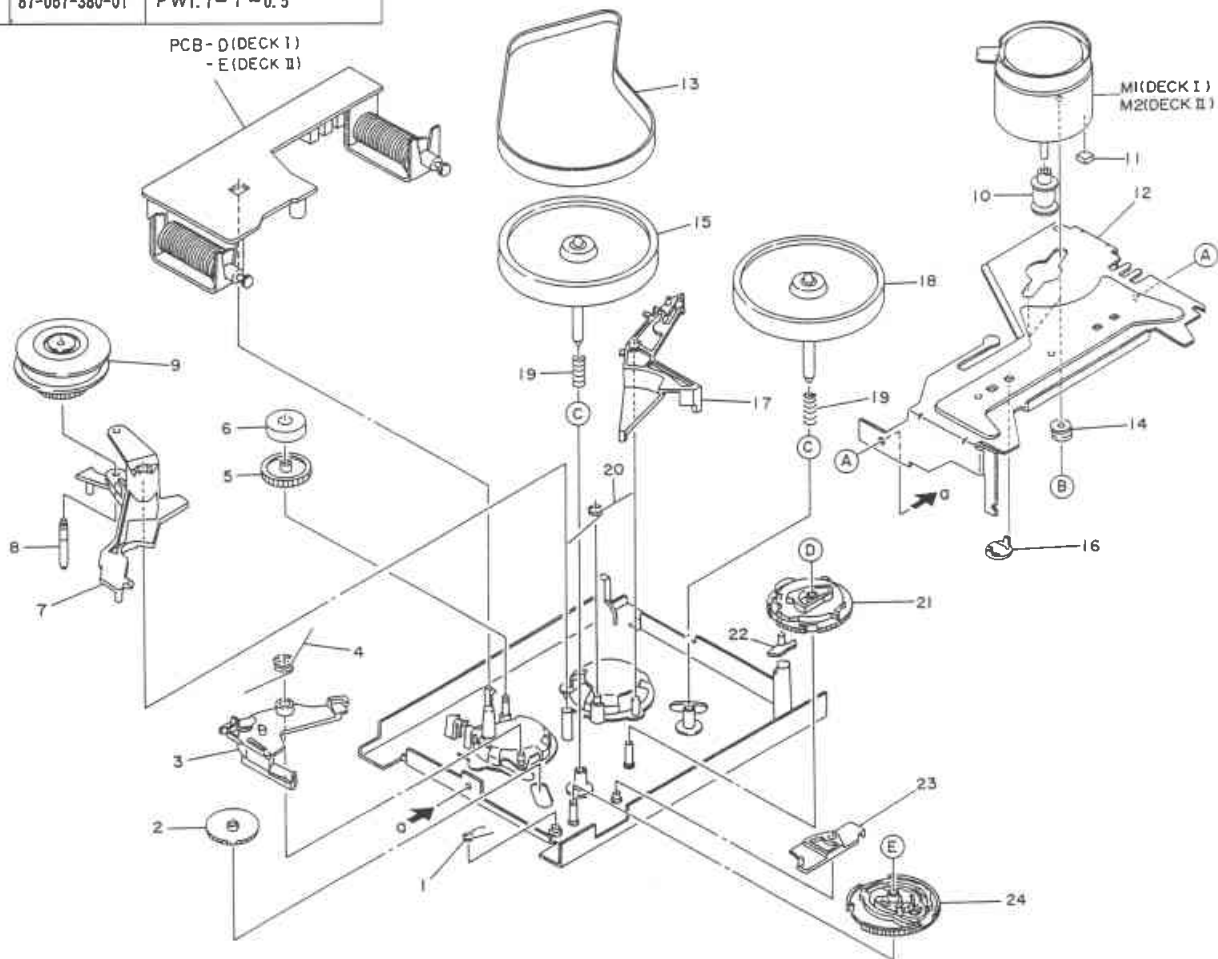


# MECHANICAL PARTS LIST

PART NO. CHANGED TO	REF. NO.	PART NO.	DESCRIPTION	COMMON MODEL	Q, TY
	1-1	*84-790-208-019	SPRING,EJECT		2
	1-2	*84-790-027-019	WINDOW,CASSETTE BOX 2		1
	1-3	*84-790-031-119	PANEL,AMTS		1
	1-4	*09-047-508-010	CASSETTE BOX ASSY(H,C,E,K,Z)	*	2
	1-4	*09-047-509-010	CASSETTE BOX ASSY(U)	*	2
	1-5	---	SHEET FOAMED MAT 250-25		2
	1-6	*84-790-030-019	PANEL,CASSETTE BOX 1		1
	1-7	*84-791-016-019	WINDOW,CASSETTE BOX 1M	*	1
	1-8	*09-047-519-010	CABINET FRONT ASSY(H,C,E,K,Z)	*	1
	1-8	*09-047-520-010	CABINET FRONT ASSY(U)	*	1
	1-9	*87-063-143-010	OIL-DMPR 75		2
	1-10	*84-790-207-019	HOLDER,MECHA		2
	1-11	---	WIRE BINDER		2
	1-12	*86-535-393-019	LEVER,EJECT STOPPER		2
	1-13	*84-721-023-010	BUTTON,POWER		1
	1-14	*84-790-209-019	ROD,POWER		1
	1-15	*82-385-383-010	STOPPER,ROD		1
	1-16	*83-317-212-019	HOLDER,VS(H)		1
	1-17	*84-790-218-010	PLATE,SHIELD		2
	1-18	*84-424-008-019	KNOB,VOLUME		2
	1-19	*84-790-042-019	CABINET,STEEL 2		1
	1-20	*87-085-184-010	BUSHING AC CORD(H)		1
	1-20	*87-085-189-010	BUSHING AC CORD(U,C)		1
	1-20	*87-085-185-010	BUSHING AC CORD(E,K,Z)		1
	1-21	*87-034-749-019	AC CORD(H)		1
	1-21	*87-034-584-019	AC CORD(U,C)		1
	1-21	*82-187-797-019	AC CORD(E,Z)		1
	1-21	*82-187-796-019	AC CORD(K)		1
	1-22	*84-791-004-019	PANEL,REAR(H)	*	1
	1-22	*84-791-010-019	PANEL,REAR(HJ)	*	1
	1-22	*84-791-005-019	PANEL,REAR(U)	*	1
	1-22	*84-791-006-019	PANEL,REAR(C)	*	1
	1-22	*84-791-007-019	PANEL,REAR(E)	*	1
	1-22	*84-791-008-019	PANEL,REAR(K)	*	1
	1-22	*84-791-009-019	PANEL,REAR(Z)	*	1
	1-23	*84-790-216-019	SHAFT,VOLUME		2
	1-24	*84-790-015-019	KNOB,VOLUME		1
	1-25	*84-790-040-010	KNOB,BALANCE		1
	1-26	---	CHASSIS,9D		1
	1-27	*81-675-010-010	FOOT,H10		2
	1-28	*84-738-022-010	FOOT		2
	1-29	*84-731-027-010	FELT,FOOT		2
	1-30	*84-790-212-019	E-SPRING,ROD		2
	1-31	*84-790-206-019	ROD,EJECT		2
	1-32	*84-790-014-019	BUTTON,EJECT		2
	1-33	*84-790-039-019	KNOB,SLIDE N		3
	1-34	*84-117-637-010	PLATE,SHIELD PT		1
	1-35	*82-231-213-010	SHEET,45X30		1

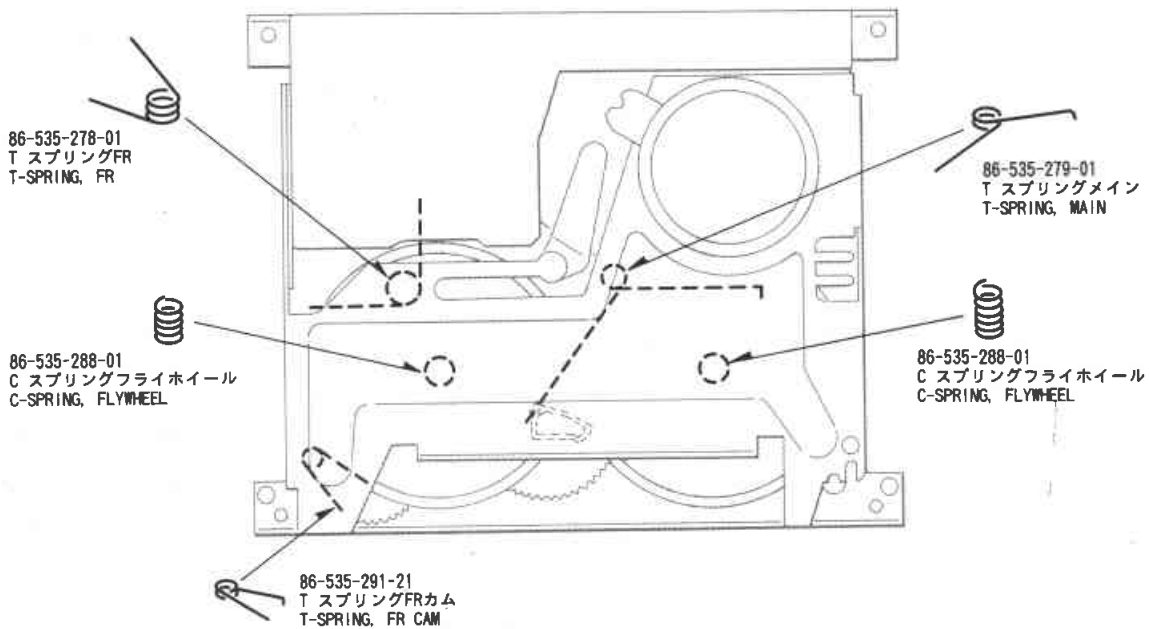
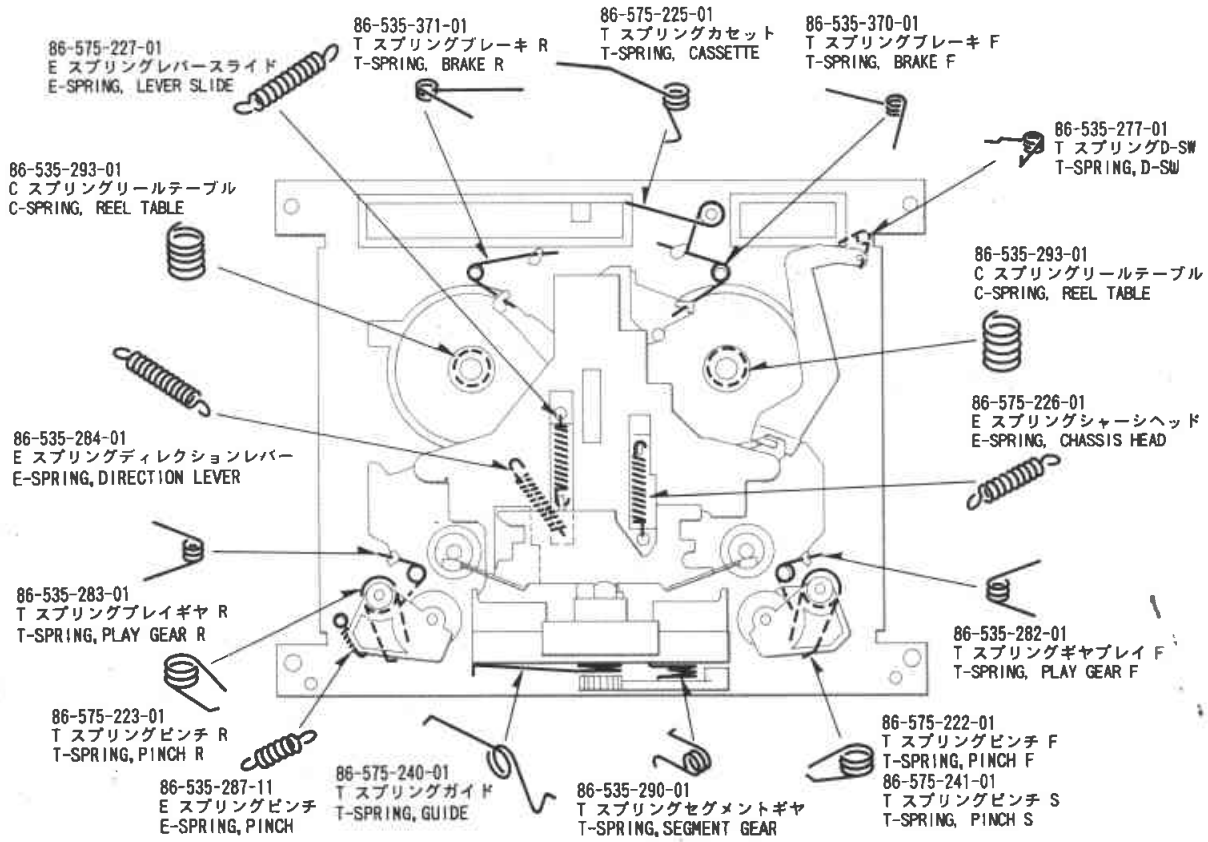
EXPLODED VIEW-3

REF. NO.	PART NO.	DESCRIPTION
A	87-081-501-01	VTT+2.6-4
B	86-575-243-01	MOTOR SCREW
C	87-067-332-01	PW2.8-4.7-0.13
D	87-081-489-01	PW1.7-3.5-0.25
E	87-067-380-01	PW1.7-7-0.5



PART NO. CHANGED TO	REF. NO.	PART NO.	DESCRIPTION	COMMON MODEL	Q'TY
	3-1	★86-535-291-210	T-SPRING, FR CAM		1
	3-2	★86-535-259-310	GEAR, PLAY		1
	3-3	86-535-230-310	LEVER, TRIGGER FR		1
	3-4	★86-535-278-019	T-SPRING, FR		1
	3-5	★86-575-220-010	GEAR, IDLER		1
	3-6	★86-535-614-010	RING, MAGNET		1
	3-7	86-535-233-110	LEVER FR		1
	3-8	86-575-213-010	SHAFT, FR		1
	3-9	★86-535-301-110	SLIP DISK ASSY		1
	3-10	★86-575-237-010	PULLY, MOTOR B		1
	3-11	★86-575-261-019	G CUSHION 5-5-1.35		1
	3-12	★86-575-218-010	HOLDER, MOTOR		1
	3-13	★86-575-210-110	BELT 1		1
	3-14	★86-575-242-010	G CUSHION DIAL 3.9-3.2		2
	3-15	86-575-203-010	FLYWHEEL F ASSY		1
	3-16	★86-535-255-010	RETAINER, FLYWHEEL		1
	3-17	86-535-231-210	LEVER, TRIGGER PLAY		1
	3-18	86-575-201-010	FLYWHEEL R ASSY		1
	3-19	★86-535-288-019	C-SPRING, FLYWHEEL		2
	3-20	★86-535-279-010	T-SPRING, MAIN		1
	3-21	★86-535-260-310	CAM, MAIN		1
	3-22	★86-535-308-110	LEVER, CHANGE		1
	3-23	★86-575-229-010	LEVER, PAUSE B		1
	3-24	★86-535-261-310	CAM, FRP		1

# SPRING APPLICATION POSITION



## ACCESSORIES/PACKAGE LIST

PART NO. CHANGED TO	REF. NO.	PART NO.	DESCRIPTION	COMMON MODEL	Q, TY
	1	*84-791-904-019	INSTRUCTION BOOKLET EX	*	1
	2	*87-032-845-019	PLUG SIEMENS(H)		1
	3	*87-034-773-010	CORD PIN, R-237W-1M		2